

# *Planck* 2013 Results: Cosmological Parameter Tables

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## **Abstract**

These tables summarize the results of *Planck* nominal mission parameter estimation exploration results. They include *Planck* data in combination with WMAP polarization, *Planck* lensing, and high- $l$  CMB experiments, as well as additional non-CMB data as detailed in the main parameter papers.

# 1 Introduction

The tables are arranged grouped firstly by cosmological model, and then by data combination. The name tags match those of the full chains also provided on the PLA. They all start with **base** to denote the baseline model, followed by the parameter tags of any additional parameters that are also varied (as defined in the parameter paper). Data combination tags are as follows (see the parameters paper for full description and references):

Data tag	Data used
<b>planck</b>	high- $l$ <i>Planck</i> temperature ( <b>CamSpec</b> , $50 \leq l \leq 2500$ )
<b>lowl</b>	low- $l$ <i>Planck</i> temperature ( $2 \leq l \leq 49$ )
<b>lensing</b>	<i>Planck</i> lensing power spectrum reconstruction
<b>lowLike</b>	low- $l$ WMAP 9 polarization
<b>tauprior</b>	A Gaussian prior on the optical depth, $\tau = 0.09 \pm 0.013$
<b>BAO</b>	Baryon oscillation data from DR7, DR9 and and 6DF
<b>SNLS</b>	Supernova data from the Supernova Legacy Survey
<b>Union2</b>	Supernova data from the Union compilation
<b>HST</b>	Hubble parameter constraint from HST (Riess et al)
<b>WMAP</b>	The full WMAP (temperature and polarization) 9 year data

Data likelihoods are either included when running the chains, or by importance sampling. Data combinations that are added by importance sampling appear at the end of the list, following the **post\_** tag. WMAP9 chains are run from the WMAP9 likelihood code with the same baseline assumptions as *Planck*, and hence may differ slightly from those available on Lambda (e.g. the baseline model has non-zero neutrino mass). Note that the best fits are merely examples of parameter combinations that fit the data well, due to parameter degeneracies there may be other combinations of parameters that fit the data nearly equally well.

Beneath each table is the minus log Likelihood  $\chi^2_{\text{eff}}$  for each best fit model, and also the contributions coming from each separate part of the likelihood. The  $R - 1$  value is also given, which measures the convergence of the sampling chains, with small values being better converged. The sampling uncertainty on quoted mean values are typically of order  $R - 1$  in units of the standard deviation.

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## 2 Baseline model

### 2.1 base\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022032	$0.02205 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.601	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247695	$0.24770 \pm 0.00012$
$\Omega_c h^2$	0.12038	$0.1199 \pm 0.0027$	$c_{100}$	1.000581	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8414	$1.836 \pm 0.013$
$100\theta_{\text{MC}}$	1.04119	$1.04131 \pm 0.00063$	$c_{217}$	0.99647	$0.9964 \pm 0.0014$	Age/Gyr	13.8242	$13.817 \pm 0.048$
$\tau$	0.0925	$0.089^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.03	—	$z_*$	1090.48	$1090.43 \pm 0.54$
$n_s$	0.9619	$0.9603 \pm 0.0073$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.58	$144.71 \pm 0.60$
$\ln(10^{10} A_s)$	3.0980	$3.089^{+0.024}_{-0.027}$	$\beta_1^1$	0.79	$0.53 \pm 0.57$	$100\theta_*$	1.04136	$1.04147 \pm 0.00062$
$A_{100}^{\text{PS}}$	152	$171 \pm 60$	$\Omega_\Lambda$	0.6817	$0.685^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.25	$1059.25 \pm 0.58$
$A_{143}^{\text{PS}}$	63.3	$54 \pm 10$	$\Omega_m$	0.3183	$0.315^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.36	$147.49 \pm 0.59$
$A_{217}^{\text{PS}}$	117.0	$107^{+20}_{-10}$	$\sigma_8$	0.8347	$0.829 \pm 0.012$	$k_D$	0.14022	$0.14009 \pm 0.00063$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$z_{\text{re}}$	11.37	$11.1 \pm 1.1$	$100\theta_D$	0.161375	$0.16140 \pm 0.00034$
$A_{217}^{\text{CIB}}$	27.2	$29^{+6}_{-9}$	$H_0$	67.04	$67.3 \pm 1.2$	$z_{\text{eq}}$	3403	$3391 \pm 60$
$A_{143}^{\text{tSZ}}$	6.80	—	$10^9 A_s$	2.215	$2.196^{+0.051}_{-0.060}$	$100\theta_{\text{eq}}$	0.8125	$0.815 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.916	$> 0.850$	$\Omega_m h^2$	0.14305	$0.1426 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07126	$0.07147 \pm 0.00091$
$r_{143 \times 217}^{\text{CIB}}$	0.406	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09591	$0.09589 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.90$ ; R-1 = 0.00755

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lowl: -6.72 CamSpec: 7797.91

## 2.2 base\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022250	$0.02218 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.556	$0.53 \pm 0.12$	$Y_P$	0.247788	$0.24776 \pm 0.00012$
$\Omega_c h^2$	0.11801	$0.1184 \pm 0.0022$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8324	$1.830 \pm 0.011$
$100\theta_{\text{MC}}$	1.04152	$1.04145 \pm 0.00061$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.7828	$13.794 \pm 0.045$
$\tau$	0.0947	$0.089 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.000	$1090.14 \pm 0.48$
$n_s$	0.9680	$0.9636 \pm 0.0067$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.028	$144.98 \pm 0.49$
$\ln(10^{10} A_s)$	3.0977	$3.086 \pm 0.023$	$\beta_1^1$	0.63	$0.49 \pm 0.57$	$100\theta_*$	1.04165	$1.04160 \pm 0.00060$
$A_{100}^{\text{PS}}$	157	$169 \pm 60$	$\Omega_\Lambda$	0.6967	$0.694^{+0.014}_{-0.013}$	$z_{\text{drag}}$	1059.59	$1059.45 \pm 0.58$
$A_{143}^{\text{PS}}$	65.8	$51 \pm 10$	$\Omega_m$	0.3033	$0.306 \pm 0.013$	$r_{\text{drag}}$	147.745	$147.72 \pm 0.50$
$A_{217}^{\text{PS}}$	118.9	$104^{+20}_{-20}$	$\sigma_8$	0.8284	$0.8230 \pm 0.0095$	$k_D$	0.13999	$0.13996 \pm 0.00057$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$z_{\text{re}}$	11.43	$11.0 \pm 1.1$	$100\theta_D$	0.161189	$0.16128 \pm 0.00033$
$A_{217}^{\text{CIB}}$	25.4	$29^{+6}_{-9}$	$H_0$	68.16	$67.9 \pm 1.0$	$z_{\text{eq}}$	3351.6	$3360 \pm 49$
$A_{143}^{\text{tSZ}}$	5.49	—	$10^9 A_s$	2.215	$2.189^{+0.048}_{-0.055}$	$100\theta_{\text{eq}}$	0.8226	$0.8209 \pm 0.0094$
$r_{143 \times 217}^{\text{PS}}$	0.905	$> 0.845$	$\Omega_m h^2$	0.14091	$0.1413 \pm 0.0020$	$r_{\text{drag}}/D_V(0.57)$	0.07209	$0.07195 \pm 0.00076$
$r_{143 \times 217}^{\text{CIB}}$	0.561	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09605	$0.09595 \pm 0.00058$			

Best-fit  $\chi^2_{\text{eff}} = 9815.86$ ; R-1 = 0.01145

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.42 lensing: 9.69 lowl: -7.72 CamSpec: 7798.95

### 2.3 base\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022135	$0.02212 \pm 0.00025$	$\gamma^{\text{CIB}}$	0.566	$0.53 \pm 0.12$	$Y_{\text{P}}$	0.247739	$0.24773 \pm 0.00011$
$\Omega_c h^2$	0.11914	$0.1187 \pm 0.0017$	$c_{100}$	1.000603	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8367	$1.8307 \pm 0.0094$
$100\theta_{\text{MC}}$	1.04139	$1.04146 \pm 0.00057$	$c_{217}$	0.99650	$0.9964 \pm 0.0014$	Age/Gyr	13.8028	$13.800 \pm 0.038$
$\tau$	0.0932	$0.091 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.244	$1090.23 \pm 0.40$
$n_s$	0.9647	$0.9629 \pm 0.0057$	$A^{\text{kSZ}}$	1.23	—	$r_*$	144.824	$144.94 \pm 0.42$
$\ln(10^{10} A_s)$	3.0970	$3.090 \pm 0.025$	$\beta_1^1$	0.70	$0.51 \pm 0.57$	$100\theta_*$	1.04155	$1.04162 \pm 0.00056$
$A_{100}^{\text{PS}}$	157	$169 \pm 60$	$\Omega_{\Lambda}$	0.6897	$0.692 \pm 0.010$	$z_{\text{drag}}$	1059.40	$1059.34 \pm 0.56$
$A_{143}^{\text{PS}}$	65.7	$53 \pm 10$	$\Omega_{\text{m}}$	0.3103	$0.308 \pm 0.010$	$r_{\text{drag}}$	147.575	$147.70 \pm 0.45$
$A_{217}^{\text{PS}}$	118.2	$106^{+20}_{-10}$	$\sigma_8$	0.8307	$0.826^{+0.011}_{-0.012}$	$k_{\text{D}}$	0.14007	$0.13993 \pm 0.00056$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$z_{\text{re}}$	11.37	$11.2 \pm 1.1$	$100\theta_{\text{D}}$	0.161297	$0.16135 \pm 0.00033$
$A_{217}^{\text{CIB}}$	25.8	$29^{+6}_{-9}$	$H_0$	67.63	$67.79 \pm 0.78$	$z_{\text{eq}}$	3375.7	$3366 \pm 40$
$A_{143}^{\text{tSZ}}$	5.39	—	$10^9 A_s$	2.213	$2.199^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8178	$0.8197 \pm 0.0075$
$r_{143 \times 217}^{\text{PS}}$	0.909	$> 0.848$	$\Omega_{\text{m}} h^2$	0.14192	$0.1415 \pm 0.0017$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07170	$0.07185 \pm 0.00059$
$r_{143 \times 217}^{\text{CIB}}$	0.539	$0.42 \pm 0.22$	$\Omega_{\text{m}} h^3$	0.09598	$0.09591 \pm 0.00058$			

Best-fit  $\chi_{\text{eff}}^2 = 9807.46$ ; R-1 = 0.00932

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.19 DR7: 1.37 6DF: 0.01 CMB - lowLike: 2014.41 lowl: -7.24 CamSpec: 7798.27



## 2.4 base\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022284	$0.02226 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.530	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247803	$0.24779 \pm 0.00012$
$\Omega_c h^2$	0.11767	$0.1171 \pm 0.0024$	$c_{100}$	1.000587	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8306	$1.824 \pm 0.012$
$100\theta_{\text{MC}}$	1.04164	$1.04172 \pm 0.00061$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.7739	$13.771 \pm 0.046$
$\tau$	0.0951	$0.095^{+0.013}_{-0.015}$	$\xi^{\text{tSZ-CIB}}$	0.26	—	$z_*$	1089.925	$1089.91 \pm 0.48$
$n_s$	0.9685	$0.9668 \pm 0.0069$	$A^{\text{ksZ}}$	0.5	—	$r_*$	145.09	$145.26 \pm 0.56$
$\ln(10^{10} A_s)$	3.0975	$3.093 \pm 0.026$	$\beta_1^1$	0.64	$0.48 \pm 0.57$	$100\theta_*$	1.04179	$1.04187 \pm 0.00060$
$A_{100}^{\text{PS}}$	156	$167 \pm 60$	$\Omega_\Lambda$	0.6991	$0.702 \pm 0.014$	$z_{\text{drag}}$	1059.63	$1059.55 \pm 0.57$
$A_{143}^{\text{PS}}$	65.4	$52 \pm 10$	$\Omega_m$	0.3009	$0.298 \pm 0.014$	$r_{\text{drag}}$	147.80	$147.97 \pm 0.56$
$A_{217}^{\text{PS}}$	121.9	$106^{+20}_{-10}$	$\sigma_8$	0.8265	$0.822 \pm 0.012$	$k_D$	0.13996	$0.13975 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$z_{\text{re}}$	11.45	$11.4 \pm 1.1$	$100\theta_D$	0.161175	$0.16124 \pm 0.00032$
$A_{217}^{\text{CIB}}$	23.9	$29^{+6}_{-9}$	$H_0$	68.36	$68.6 \pm 1.1$	$z_{\text{eq}}$	3344	$3331 \pm 55$
$A_{143}^{\text{tSZ}}$	5.51	—	$10^9 A_s$	2.214	$2.205^{+0.054}_{-0.062}$	$100\theta_{\text{eq}}$	0.8241	$0.827^{+0.010}_{-0.011}$
$r_{143 \times 217}^{\text{PS}}$	0.911	$> 0.849$	$\Omega_m h^2$	0.14060	$0.1400 \pm 0.0023$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.07244^{+0.00080}_{-0.00091}$
$r_{143 \times 217}^{\text{CIB}}$	0.518	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09611	$0.09600 \pm 0.00058$			

Best-fit  $\chi^2_{\text{eff}} = 9811.70$ ; R-1 = 0.01218

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.41 lowl: -7.81 CamSpec: 7799.25 Hubble - HST: 5.13

## 2.5 base\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022172	$0.02217 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.531	$0.53 \pm 0.13$	$Y_P$	0.247755	$0.24775 \pm 0.00012$
$\Omega_c h^2$	0.11858	$0.1181 \pm 0.0025$	$c_{100}$	1.000583	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8341	$1.828 \pm 0.012$
$100\theta_{\text{MC}}$	1.04147	$1.04155 \pm 0.00062$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.7946	$13.790 \pm 0.047$
$\tau$	0.0942	$0.093^{+0.013}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.21	—	$z_*$	1090.15	$1090.11 \pm 0.50$
$n_s$	0.9662	$0.9644 \pm 0.0070$	$A^{\text{ksZ}}$	0.7	—	$r_*$	144.94	$145.08 \pm 0.56$
$\ln(10^{10} A_s)$	3.0976	$3.091 \pm 0.025$	$\beta_1^1$	0.69	$0.49 \pm 0.57$	$100\theta_*$	1.04161	$1.04170 \pm 0.00061$
$A_{100}^{\text{PS}}$	150	$169 \pm 60$	$\Omega_\Lambda$	0.6931	$0.696 \pm 0.015$	$z_{\text{drag}}$	1059.44	$1059.40 \pm 0.57$
$A_{143}^{\text{PS}}$	64.3	$53 \pm 10$	$\Omega_m$	0.3069	$0.304 \pm 0.015$	$r_{\text{drag}}$	147.68	$147.83 \pm 0.57$
$A_{217}^{\text{PS}}$	122.9	$106^{+20}_{-20}$	$\sigma_8$	0.8294	$0.824 \pm 0.012$	$k_D$	0.13999	$0.13983 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$z_{\text{re}}$	11.43	$11.3 \pm 1.1$	$100\theta_D$	0.161274	$0.16132 \pm 0.00033$
$A_{217}^{\text{CIB}}$	23.7	$29^{+6}_{-9}$	$H_0$	67.88	$68.1 \pm 1.1$	$z_{\text{eq}}$	3363	$3351 \pm 56$
$A_{143}^{\text{tSZ}}$	6.12	—	$10^9 A_s$	2.214	$2.201^{+0.053}_{-0.061}$	$100\theta_{\text{eq}}$	0.8202	$0.823 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.911	$> 0.849$	$\Omega_m h^2$	0.14140	$0.1409 \pm 0.0023$	$r_{\text{drag}}/D_V(0.57)$	0.07189	$0.07209 \pm 0.00086$
$r_{143 \times 217}^{\text{CIB}}$	0.496	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09598	$0.09592 \pm 0.00058$			

Best-fit  $\chi^2_{\text{eff}} = 10235.05$ ; R-1 = 0.00882

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.43 lowl: -7.49 CamSpec: 7798.27 SN - SNLS: 429.12

## 2.6 base\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022117	$0.02209 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.544	$0.53 \pm 0.12$	$Y_P$	0.247732	$0.24772 \pm 0.00012$
$\Omega_c h^2$	0.11967	$0.1192 \pm 0.0025$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8388	$1.833 \pm 0.012$
$100\theta_{\text{MC}}$	1.04136	$1.04139 \pm 0.00062$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.8079	$13.807 \pm 0.047$
$\tau$	0.0930	$0.091^{+0.013}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.32	$1090.32 \pm 0.51$
$n_s$	0.9640	$0.9618 \pm 0.0071$	$A^{\text{ksZ}}$	0.7	—	$r_*$	144.70	$144.84 \pm 0.57$
$\ln(10^{10} A_s)$	3.0978	$3.090 \pm 0.025$	$\beta_1^1$	0.70	$0.52 \pm 0.57$	$100\theta_*$	1.04151	$1.04155 \pm 0.00061$
$A_{100}^{\text{PS}}$	147	$170 \pm 60$	$\Omega_\Lambda$	0.6866	$0.689^{+0.017}_{-0.015}$	$z_{\text{drag}}$	1059.40	$1059.30 \pm 0.57$
$A_{143}^{\text{PS}}$	63.6	$53 \pm 10$	$\Omega_m$	0.3134	$0.311^{+0.015}_{-0.017}$	$r_{\text{drag}}$	147.45	$147.61 \pm 0.57$
$A_{217}^{\text{PS}}$	122.4	$107^{+20}_{-10}$	$\sigma_8$	0.8326	$0.827 \pm 0.012$	$k_D$	0.14019	$0.14000 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$z_{\text{re}}$	11.37	$11.1 \pm 1.1$	$100\theta_D$	0.161299	$0.16137 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.1	$29^{+6}_{-9}$	$H_0$	67.41	$67.6 \pm 1.1$	$z_{\text{eq}}$	3388	$3377 \pm 57$
$A_{143}^{\text{tSZ}}$	6.42	—	$10^9 A_s$	2.215	$2.198^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8155	$0.818 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.850$	$\Omega_m h^2$	0.14243	$0.1420 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07153	$0.07168 \pm 0.00087$
$r_{143 \times 217}^{\text{CIB}}$	0.479	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09602	$0.09590 \pm 0.00058$			

Best-fit  $\chi^2_{\text{eff}} = 9936.17$ ; R-1 = 0.00779

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.44 lowl: -7.10 CamSpec: 7797.72 SN - Union2.1: 130.51

## 2.7 base\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022069	$0.02207 \pm 0.00027$	$A_{148}^{\text{PS, ACT}}$	10.22	$10.53 \pm 0.59$	$z_{\text{re}}$	11.38	$11.1 \pm 1.1$
$\Omega_c h^2$	0.12025	$0.1198 \pm 0.0026$	$A_{218}^{\text{PS, ACT}}$	75.21	$76.8 \pm 4.5$	$H_0$	67.15	$67.3 \pm 1.2$
$100\theta_{\text{MC}}$	1.04130	$1.04132 \pm 0.00063$	$A_{95}^{\text{PS, SPT}}$	7.02	$7.64^{+1.4}_{-1.6}$	$10^9 A_s$	2.211	$2.198^{+0.052}_{-0.060}$
$\tau$	0.0927	$0.091^{+0.013}_{-0.014}$	$A_{150}^{\text{PS, SPT}}$	9.66	$10.06 \pm 0.51$	$\Omega_m h^2$	0.14297	$0.1425 \pm 0.0025$
$n_s$	0.9582	$0.9585 \pm 0.0070$	$A_{220}^{\text{PS, SPT}}$	71.99	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09600	$0.09594 \pm 0.00056$
$\ln(10^{10} A_s)$	3.0959	$3.090 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.830	$0.832 \pm 0.090$	$Y_p$	0.247711	$0.24771 \pm 0.00012$
$A_{100}^{\text{PS}}$	209	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.583	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8365	$1.833 \pm 0.013$
$A_{143}^{\text{PS}}$	72.6	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9080	$0.937 \pm 0.024$	Age/Gyr	13.8170	$13.813 \pm 0.047$
$A_{217}^{\text{PS}}$	59.5	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	$z_*$	1090.43	$1090.38 \pm 0.51$
$A_{143}^{\text{CIB}}$	3.57	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.879	$0.85 \pm 0.20$	$r_*$	144.59	$144.70 \pm 0.59$
$A_{217}^{\text{CIB}}$	53.9	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9913	$0.9922 \pm 0.0073$	$100\theta_*$	1.04146	$1.04148 \pm 0.00062$
$A^{\text{tSZ}}_{143}$	5.17	$2.54^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0022	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.32	$1059.31 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.825	$0.823^{+0.069}_{-0.077}$	$y_{148}^{\text{ACTe}}$	0.9873	$0.9884 \pm 0.0072$	$r_{\text{drag}}$	147.35	$147.47 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9605	$0.964 \pm 0.010$	$k_D$	0.14026	$0.14013 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.674	$0.638 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9848	$0.984 \pm 0.020$	$100\theta_D$	0.161342	$0.16136 \pm 0.00032$
$c_{100}$	1.000583	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9845	$0.9875 \pm 0.0095$	$z_{\text{eq}}$	3401	$3390 \pm 59$
$c_{217}$	0.99743	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0173	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8130	$0.815 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.409$	$\Omega_\Lambda$	0.6830	$0.685^{+0.017}_{-0.016}$	$r_{\text{drag}}/D_V(0.57)$	0.07133	$0.07149 \pm 0.00089$
$A^{\text{kSZ}}$	0.89	$5.34^{+2.8}_{-1.9}$	$\Omega_m$	0.3170	$0.315 \pm 0.016$			
$\beta_1^1$	0.56	$0.38 \pm 0.55$	$\sigma_8$	0.8322	$0.828 \pm 0.012$			

Best-fit  $\chi^2_{\text{eff}} = 10509.55$ ; R-1 =0.00669

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.48 lowl: -5.92 CamSpec: 7807.82 highL: 692.97

## 2.8 base\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022199	$0.02218 \pm 0.00026$	$A_{148}^{\text{PS, ACT}}$	10.44	$10.67^{+0.55}_{-0.65}$	$z_{\text{re}}$	11.42	$11.1 \pm 1.1$
$\Omega_c h^2$	0.11847	$0.1186 \pm 0.0022$	$A_{218}^{\text{PS, ACT}}$	76.50	$76.9 \pm 4.5$	$H_0$	67.94	$67.9 \pm 1.0$
$100\theta_{\text{MC}}$	1.04146	$1.04144 \pm 0.00061$	$A_{95}^{\text{PS, SPT}}$	7.53	$7.84^{+1.4}_{-1.6}$	$10^9 A_s$	2.208	$2.192^{+0.049}_{-0.056}$
$\tau$	0.0943	$0.090^{+0.013}_{-0.014}$	$A_{150}^{\text{PS, SPT}}$	9.97	$10.22 \pm 0.51$	$\Omega_m h^2$	0.14131	$0.1414 \pm 0.0021$
$n_s$	0.9624	$0.9614 \pm 0.0063$	$A_{220}^{\text{PS, SPT}}$	73.37	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09601	$0.09599 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0947	$3.087 \pm 0.024$	$r_{95 \times 150}^{\text{PS}}$	0.799	$0.832 \pm 0.089$	$Y_p$	0.247767	$0.24776 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.545	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8284	$1.829 \pm 0.011$
$A_{143}^{\text{PS}}$	72.2	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9074	$0.935 \pm 0.024$	Age/Gyr	13.7914	$13.794 \pm 0.044$
$A_{217}^{\text{PS}}$	60.2	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.102	$1090.14 \pm 0.46$
$A_{143}^{\text{CIB}}$	3.25	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.949	$144.93 \pm 0.50$
$A_{217}^{\text{CIB}}$	52.3	$50.0 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9926 \pm 0.0073$	$100\theta_*$	1.04161	$1.04159 \pm 0.00060$
$A^{\text{tSZ}}_{143}$	4.64	$2.51^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0035	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.51	$1059.47 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.825 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9881	$0.9890 \pm 0.0071$	$r_{\text{drag}}$	147.68	$147.67 \pm 0.50$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9618	$0.965 \pm 0.010$	$k_D$	0.14001	$0.14001 \pm 0.00057$
$\gamma^{\text{CIB}}$	0.656	$0.643 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9849	$0.985 \pm 0.020$	$100\theta_D$	0.161239	$0.16126 \pm 0.00032$
$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9862	$0.9891 \pm 0.0096$	$z_{\text{eq}}$	3361.2	$3364 \pm 49$
$c_{217}$	0.99731	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0177	$1.026 \pm 0.023$	$100\theta_{\text{eq}}$	0.8206	$0.8202 \pm 0.0095$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.389$	$\Omega_\Lambda$	0.6939	$0.693 \pm 0.013$	$r_{\text{drag}}/D_V(0.57)$	0.07193	$0.07190 \pm 0.00076$
$A^{\text{kSZ}}$	1.14	$4.74^{+2.6}_{-2.1}$	$\Omega_m$	0.3061	$0.307 \pm 0.013$			
$\beta_1^1$	0.38	$0.36 \pm 0.54$	$\sigma_8$	0.8271	$0.8233 \pm 0.0097$			

Best-fit  $\chi^2_{\text{eff}} = 10517.42$ ; R-1 = 0.01993

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.44 lensing: 9.54 lowl: -6.83 CamSpec: 7808.79 highL: 691.37

## 2.9 base\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022161	$0.02214 \pm 0.00024$	$A_{148}^{\text{PS, ACT}}$	10.24	$10.54 \pm 0.59$	$z_{\text{re}}$	11.52	$11.3 \pm 1.1$
$\Omega_c h^2$	0.11889	$0.1187 \pm 0.0017$	$A_{218}^{\text{PS, ACT}}$	75.57	$76.9 \pm 4.5$	$H_0$	67.77	$67.80 \pm 0.77$
$100\theta_{\text{MC}}$	1.04148	$1.04147 \pm 0.00056$	$A_{95}^{\text{PS, SPT}}$	7.14	$7.66^{+1.3}_{-1.7}$	$10^9 A_s$	2.214	$2.200^{+0.053}_{-0.060}$
$\tau$	0.0952	$0.092 \pm 0.013$	$A_{150}^{\text{PS, SPT}}$	9.76	$10.08 \pm 0.51$	$\Omega_m h^2$	0.14170	$0.1415 \pm 0.0016$
$n_s$	0.9611	$0.9608 \pm 0.0054$	$A_{220}^{\text{PS, SPT}}$	72.60	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09602	$0.09595 \pm 0.00056$
$\ln(10^{10} A_s)$	3.0973	$3.091 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.806	$0.832 \pm 0.090$	$Y_p$	0.247750	$0.24774 \pm 0.00010$
$A_{100}^{\text{PS}}$	204	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.563	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8301	$1.8284 \pm 0.0091$
$A_{143}^{\text{PS}}$	71.8	$72.4 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9112	$0.937 \pm 0.024$	Age/Gyr	13.7965	$13.798 \pm 0.037$
$A_{217}^{\text{PS}}$	59.4	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.43 \pm 0.19$	$z_*$	1090.189	$1090.20 \pm 0.39$
$A_{143}^{\text{CIB}}$	3.30	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.85 \pm 0.20$	$r_*$	144.867	$144.92 \pm 0.42$
$A_{217}^{\text{CIB}}$	53.0	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9924 \pm 0.0073$	$100\theta_*$	1.04163	$1.04162 \pm 0.00056$
$A_{143}^{\text{tSZ}}$	4.86	$2.54^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.44	$1059.39 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.823 \pm 0.070$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9887 \pm 0.0072$	$r_{\text{drag}}$	147.611	$147.68 \pm 0.45$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9614	$0.964 \pm 0.010$	$k_D$	0.14006	$0.13997 \pm 0.00055$
$\gamma^{\text{CIB}}$	0.667	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9849	$0.984 \pm 0.020$	$100\theta_D$	0.161281	$0.16132 \pm 0.00031$
$c_{100}$	1.000584	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9851	$0.9880 \pm 0.0095$	$z_{\text{eq}}$	3370.5	$3366 \pm 39$
$c_{217}$	0.99733	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0173	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8189	$0.8196 \pm 0.0074$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.410$	$\Omega_\Lambda$	0.6914	$0.692 \pm 0.010$	$r_{\text{drag}}/D_V(0.57)$	0.07180	$0.07185 \pm 0.00058$
$A^{\text{kSZ}}$	1.58	$5.34^{+2.8}_{-2.0}$	$\Omega_m$	0.3086	$0.308 \pm 0.010$			
$\beta_1^1$	0.45	$0.36 \pm 0.54$	$\sigma_8$	0.8288	$0.826 \pm 0.012$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.84$ ; R-1 = 0.00964

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.16 DR9: 0.28 6DF: 0.01 CMB - lowLike: 2014.55 lowl: -6.52 CamSpec: 7808.56 highL: 692.72

## 2.10 base\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022245	$0.02228 \pm 0.00027$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.56^{+0.57}_{-0.64}$	$z_{\text{re}}$	11.59	$11.4 \pm 1.1$
$\Omega_c h^2$	0.11782	$0.1171 \pm 0.0024$	$A_{218}^{\text{PS, ACT}}$	75.65	$77.0 \pm 4.5$	$H_0$	68.27	$68.6^{+1.1}_{-1.2}$
$100\theta_{\text{MC}}$	1.04165	$1.04173 \pm 0.00061$	$A_{95}^{\text{PS, SPT}}$	7.20	$7.71^{+1.4}_{-1.6}$	$10^9 A_s$	2.214	$2.206 \pm 0.058$
$\tau$	0.0966	$0.096^{+0.013}_{-0.015}$	$A_{150}^{\text{PS, SPT}}$	9.74	$10.12 \pm 0.51$	$\Omega_m h^2$	0.14071	$0.1401 \pm 0.0023$
$n_s$	0.9637	$0.9647 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	72.47	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09607	$0.09605 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0975	$3.093 \pm 0.026$	$r_{95 \times 150}^{\text{PS}}$	0.819	$0.831 \pm 0.091$	$Y_p$	0.247786	$0.24780 \pm 0.00011$
$A_{100}^{\text{PS}}$	200	$211 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.573	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8252	$1.822 \pm 0.012$
$A_{143}^{\text{PS}}$	71.3	$71 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9085	$0.937^{+0.023}_{-0.026}$	Age/Gyr	13.7784	$13.769 \pm 0.046$
$A_{217}^{\text{PS}}$	59.7	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	$z_*$	1089.987	$1089.88 \pm 0.48$
$A_{143}^{\text{CIB}}$	3.50	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.19$	$r_*$	145.08	$145.24 \pm 0.55$
$A_{217}^{\text{CIB}}$	53.2	$49.8 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9931 \pm 0.0073$	$100\theta_*$	1.04179	$1.04187 \pm 0.00060$
$A^{\text{tSZ}}_{143}$	5.14	$2.53^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0024	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.55	$1059.60 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.821^{+0.071}_{-0.082}$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9893 \pm 0.0071$	$r_{\text{drag}}$	147.80	$147.95 \pm 0.55$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9602	$0.965 \pm 0.010$	$k_D$	0.13992	$0.13980 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.665	$0.640 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9857	$0.985 \pm 0.020$	$100\theta_D$	0.161225	$0.16121 \pm 0.00031$
$c_{100}$	1.000609	$1.00060 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9858	$0.9893 \pm 0.0094$	$z_{\text{eq}}$	3347	$3332 \pm 54$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0177	$1.026 \pm 0.024$	$100\theta_{\text{eq}}$	0.8236	$0.827^{+0.010}_{-0.012}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.408$	$\Omega_\Lambda$	0.6981	$0.702 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07219	$0.07244^{+0.00080}_{-0.00092}$
$A^{\text{kSZ}}$	0.96	$5.35^{+2.7}_{-2.0}$	$\Omega_m$	0.3019	$0.298 \pm 0.014$			
$\beta_1^1$	0.38	$0.32 \pm 0.55$	$\sigma_8$	0.8257	$0.822 \pm 0.013$			

Best-fit  $\chi^2_{\text{eff}} = 10515.40$ ; R-1 = 0.01522

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.58 lowl: -7.00 CamSpec: 7809.47 highL: 692.95 Hubble - HST: 5.29

## 2.11 base\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022195	$0.02219 \pm 0.00027$	$A_{148}^{\text{PS, ACT}}$	10.30	$10.55 \pm 0.59$	$z_{\text{re}}$	11.54	$11.3 \pm 1.1$
$\Omega_c h^2$	0.11848	$0.1181 \pm 0.0024$	$A_{218}^{\text{PS, ACT}}$	76.63	$77.0 \pm 4.5$	$H_0$	67.96	$68.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04155	$1.04156 \pm 0.00062$	$A_{95}^{\text{PS, SPT}}$	7.46	$7.68^{+1.4}_{-1.6}$	$10^9 A_s$	2.214	$2.202^{+0.054}_{-0.061}$
$\tau$	0.0956	$0.094^{+0.013}_{-0.014}$	$A_{150}^{\text{PS, SPT}}$	9.82	$10.09 \pm 0.51$	$\Omega_m h^2$	0.14132	$0.1409 \pm 0.0023$
$n_s$	0.9620	$0.9624 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	73.24	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09604	$0.09596 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0972	$3.092 \pm 0.026$	$r_{95 \times 150}^{\text{PS}}$	0.791	$0.831 \pm 0.090$	$Y_p$	0.247765	$0.24776 \pm 0.00012$
$A_{100}^{\text{PS}}$	202	$211 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.541	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8283	$1.825 \pm 0.012$
$A_{143}^{\text{PS}}$	72.1	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9100	$0.937 \pm 0.024$	Age/Gyr	13.7894	$13.787 \pm 0.046$
$A_{217}^{\text{PS}}$	60.8	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.430	$0.44 \pm 0.19$	$z_*$	1090.108	$1090.08 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.21	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.848	$0.85 \pm 0.20$	$r_*$	144.95	$145.06 \pm 0.56$
$A_{217}^{\text{CIB}}$	51.8	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9927 \pm 0.0073$	$100\theta_*$	1.04169	$1.04170 \pm 0.00060$
$A^{\text{tSZ}}_{143}$	4.60	$2.53^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0035	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.51	$1059.46 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.809	$0.822^{+0.070}_{-0.079}$	$y_{148}^{\text{ACTe}}$	0.9880	$0.9889 \pm 0.0072$	$r_{\text{drag}}$	147.68	$147.80 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9615	$0.965 \pm 0.010$	$k_D$	0.14001	$0.13988 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.652	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9847	$0.985 \pm 0.020$	$100\theta_D$	0.161257	$0.16128 \pm 0.00032$
$c_{100}$	1.000586	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9853	$0.9885 \pm 0.0095$	$z_{\text{eq}}$	3361	$3352 \pm 55$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0161	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8206	$0.823 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.411$	$\Omega_\Lambda$	0.6940	$0.696 \pm 0.015$	$r_{\text{drag}}/D_V(0.57)$	0.07195	$0.07209 \pm 0.00086$
$A^{\text{kSZ}}$	1.80	$5.36^{+2.8}_{-2.0}$	$\Omega_m$	0.3060	$0.304 \pm 0.015$			
$\beta_1^1$	0.39	$0.34 \pm 0.55$	$\sigma_8$	0.8275	$0.824 \pm 0.012$			

Best-fit  $\chi^2_{\text{eff}} = 10938.52$ ; R-1 = 0.01030

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.55 lowl: -6.68 CamSpec: 7808.72 highL: 692.75 SN - SNLS: 429.04



## 2.12 base\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022124	$0.02212 \pm 0.00027$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.54 \pm 0.59$	$z_{\text{re}}$	11.45	$11.2 \pm 1.1$
$\Omega_c h^2$	0.11950	$0.1192 \pm 0.0025$	$A_{218}^{\text{PS, ACT}}$	76.00	$76.9 \pm 4.5$	$H_0$	67.49	$67.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04138	$1.04140 \pm 0.00062$	$A_{95}^{\text{PS, SPT}}$	7.25	$7.66^{+1.3}_{-1.6}$	$10^9 A_s$	2.212	$2.199^{+0.053}_{-0.060}$
$\tau$	0.0941	$0.092 \pm 0.013$	$A_{150}^{\text{PS, SPT}}$	9.77	$10.08 \pm 0.51$	$\Omega_m h^2$	0.14227	$0.1420 \pm 0.0024$
$n_s$	0.9599	$0.9599 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	72.83	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09602	$0.09595 \pm 0.00056$
$\ln(10^{10} A_s)$	3.0965	$3.090 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.831 \pm 0.090$	$Y_p$	0.247734	$0.24773 \pm 0.00012$
$A_{100}^{\text{PS}}$	202	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.556	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8327	$1.830 \pm 0.012$
$A_{143}^{\text{PS}}$	72.2	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9104	$0.937 \pm 0.024$	Age/Gyr	13.8057	$13.804 \pm 0.046$
$A_{217}^{\text{PS}}$	60.4	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.430	$0.44 \pm 0.19$	$z_*$	1090.291	$1090.28 \pm 0.50$
$A_{143}^{\text{CIB}}$	3.30	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.85 \pm 0.20$	$r_*$	144.74	$144.83 \pm 0.57$
$A_{217}^{\text{CIB}}$	52.6	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9923 \pm 0.0073$	$100\theta_*$	1.04154	$1.04156 \pm 0.00061$
$A^{\text{tSZ}}_{143}$	4.82	$2.53^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.40	$1059.36 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.823^{+0.069}_{-0.078}$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9886 \pm 0.0072$	$r_{\text{drag}}$	147.49	$147.58 \pm 0.57$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9608	$0.964 \pm 0.010$	$k_D$	0.14016	$0.14005 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.660	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9844	$0.984 \pm 0.020$	$100\theta_D$	0.161300	$0.16133 \pm 0.00032$
$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9878 \pm 0.0095$	$z_{\text{eq}}$	3384	$3377 \pm 56$
$c_{217}$	0.99735	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0170	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8162	$0.818 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.411$	$\Omega_\Lambda$	0.6876	$0.689^{+0.016}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07159	$0.07170 \pm 0.00086$
$A^{\text{kSZ}}$	1.53	$5.35^{+2.8}_{-1.9}$	$\Omega_m$	0.3124	$0.311^{+0.015}_{-0.016}$			
$\beta_1^1$	0.43	$0.37 \pm 0.55$	$\sigma_8$	0.8302	$0.827 \pm 0.012$			

Best-fit  $\chi^2_{\text{eff}} = 10639.67$ ; R-1 =0.00779

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.51 lowl: -6.30 CamSpec: 7808.05 highL: 692.81 SN - Union2.1: 130.48

### 2.13 base\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022068	$0.02207 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.557	$0.53 \pm 0.13$	$Y_P$	0.247710	$0.24771 \pm 0.00014$
$\Omega_c h^2$	0.12029	$0.1196 \pm 0.0031$	$c_{100}$	1.000581	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8411	$1.834 \pm 0.015$
$100\theta_{\text{MC}}$	1.04122	$1.04132 \pm 0.00068$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.819	$13.813 \pm 0.058$
$\tau$	0.0925	$0.097 \pm 0.038$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.43	$1090.37 \pm 0.65$
$n_s$	0.9624	$0.9616 \pm 0.0094$	$A^{\text{kSZ}}$	0.66	$< 5.97$	$r_*$	144.58	$144.75 \pm 0.66$
$\ln(10^{10} A_s)$	3.098	$3.103 \pm 0.072$	$\beta_1^1$	0.76	$0.53 \pm 0.57$	$100\theta_*$	1.04139	$1.04148 \pm 0.00066$
$A_{100}^{\text{PS}}$	148	$169 \pm 60$	$\Omega_\Lambda$	0.6825	$0.686 \pm 0.020$	$z_{\text{drag}}$	1059.32	$1059.29 \pm 0.65$
$A_{143}^{\text{PS}}$	63.1	$54 \pm 10$	$\Omega_m$	0.3175	$0.314 \pm 0.020$	$r_{\text{drag}}$	147.34	$147.53 \pm 0.64$
$A_{217}^{\text{PS}}$	121.0	$107^{+20}_{-10}$	$\sigma_8$	0.8344	$0.834 \pm 0.027$	$k_D$	0.14026	$0.14007 \pm 0.00064$
$A_{143}^{\text{CIB}}$	0.0	$< 10.3$	$z_{\text{re}}$	11.35	$11.4^{+4.0}_{-2.8}$	$100\theta_D$	0.161332	$0.16137 \pm 0.00037$
$A_{217}^{\text{CIB}}$	25.1	$29^{+6}_{-9}$	$H_0$	67.11	$67.4 \pm 1.4$	$z_{\text{eq}}$	3402	$3386 \pm 69$
$A_{143}^{\text{tSZ}}$	6.99	—	$10^9 A_s$	2.215	$2.23 \pm 0.16$	$100\theta_{\text{eq}}$	0.8128	$0.816 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.893	$> 0.851$	$\Omega_m h^2$	0.14300	$0.1423 \pm 0.0029$	$r_{\text{drag}}/D_V(0.57)$	0.07130	$0.0716 \pm 0.0011$
$r_{143 \times 217}^{\text{CIB}}$	0.421	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09597	$0.09590 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7791.18$ ; R-1 = 0.00526

$\chi^2_{\text{eff}}$ : CMB - lowl: -6.80 CamSpec: 7797.47

## 2.14 base\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022242	$0.02217 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.578	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247785	$0.24775 \pm 0.00014$
$\Omega_c h^2$	0.11805	$0.1186 \pm 0.0031$	$c_{100}$	1.000603	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8321	$1.830 \pm 0.015$
$100\theta_{\text{MC}}$	1.04150	$1.04141 \pm 0.00067$	$c_{217}$	0.99644	$0.9964 \pm 0.0014$	Age/Gyr	13.784	$13.796 \pm 0.058$
$\tau$	0.0949	$0.089 \pm 0.032$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$z_*$	1090.01	$1090.16 \pm 0.65$
$n_s$	0.9675	$0.9635 \pm 0.0094$	$A^{\text{kSZ}}$	0.6	—	$r_*$	145.02	$144.96 \pm 0.66$
$\ln(10^{10} A_s)$	3.098	$3.085 \pm 0.057$	$\beta_1^1$	0.63	$0.50 \pm 0.58$	$100\theta_*$	1.04164	$1.04156 \pm 0.00066$
$A_{100}^{\text{PS}}$	154	$169 \pm 60$	$\Omega_\Lambda$	0.6964	$0.693 \pm 0.019$	$z_{\text{drag}}$	1059.59	$1059.43 \pm 0.64$
$A_{143}^{\text{PS}}$	65.2	$52 \pm 10$	$\Omega_m$	0.3036	$0.307 \pm 0.019$	$r_{\text{drag}}$	147.74	$147.70 \pm 0.63$
$A_{217}^{\text{PS}}$	116.7	$104^{+20}_{-20}$	$\sigma_8$	0.8285	$0.823 \pm 0.018$	$k_D$	0.13998	$0.13996 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$z_{\text{re}}$	11.45	$10.8^{+3.1}_{-2.5}$	$100\theta_D$	0.161196	$0.16129 \pm 0.00036$
$A_{217}^{\text{CIB}}$	26.2	$29^{+6}_{-9}$	$H_0$	68.14	$67.9 \pm 1.5$	$z_{\text{eq}}$	3352	$3362 \pm 69$
$A_{143}^{\text{tSZ}}$	5.51	—	$10^9 A_s$	2.215	$2.19^{+0.12}_{-0.14}$	$100\theta_{\text{eq}}$	0.8224	$0.821 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.920	$> 0.848$	$\Omega_m h^2$	0.14094	$0.1414 \pm 0.0029$	$r_{\text{drag}}/D_V(0.57)$	0.07207	$0.0719 \pm 0.0011$
$r_{143 \times 217}^{\text{CIB}}$	0.744	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09603	$0.09593 \pm 0.00058$			

Best-fit  $\chi^2_{\text{eff}} = 7801.53$ ; R-1 = 0.01047

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.70 lowl: -7.65 CamSpec: 7799.11

## 2.15 base\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022183	$0.02216 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.521	$0.53 \pm 0.13$	$Y_P$	0.247760	$0.24775 \pm 0.00012$
$\Omega_c h^2$	0.11866	$0.1185 \pm 0.0018$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8327	$1.829 \pm 0.010$
$100\theta_{\text{MC}}$	1.04148	$1.04147 \pm 0.00057$	$c_{217}$	0.99632	$0.9964 \pm 0.0014$	Age/Gyr	13.7935	$13.795 \pm 0.041$
$\tau$	0.0974	$0.104^{+0.037}_{-0.032}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.139	$1090.16 \pm 0.44$
$n_s$	0.9658	$0.9644 \pm 0.0067$	$A^{\text{kSZ}}$	0.00	$< 5.91$	$r_*$	144.911	$144.98 \pm 0.44$
$\ln(10^{10} A_s)$	3.103	$3.115^{+0.073}_{-0.062}$	$\beta_1^1$	0.65	$0.49 \pm 0.57$	$100\theta_*$	1.04162	$1.04162 \pm 0.00057$
$A_{100}^{\text{PS}}$	128	$166 \pm 60$	$\Omega_\Lambda$	0.6928	$0.693^{+0.012}_{-0.011}$	$z_{\text{drag}}$	1059.47	$1059.40 \pm 0.59$
$A_{143}^{\text{PS}}$	56.8	$53 \pm 10$	$\Omega_m$	0.3072	$0.307^{+0.011}_{-0.012}$	$r_{\text{drag}}$	147.647	$147.73 \pm 0.46$
$A_{217}^{\text{PS}}$	120.2	$107^{+20}_{-10}$	$\sigma_8$	0.8318	$0.836^{+0.029}_{-0.026}$	$k_D$	0.14004	$0.13993 \pm 0.00056$
$A_{143}^{\text{CIB}}$	1.03	$< 10.1$	$z_{\text{re}}$	11.70	$12.1^{+3.4}_{-2.3}$	$100\theta_D$	0.161257	$0.16131 \pm 0.00034$
$A_{217}^{\text{CIB}}$	25.6	$28^{+6}_{-9}$	$H_0$	67.86	$67.91 \pm 0.85$	$z_{\text{eq}}$	3365.5	$3361 \pm 42$
$A_{143}^{\text{tSZ}}$	9.12	—	$10^9 A_s$	2.227	$2.26 \pm 0.15$	$100\theta_{\text{eq}}$	0.8198	$0.8207 \pm 0.0080$
$r_{143 \times 217}^{\text{PS}}$	0.890	$> 0.852$	$\Omega_m h^2$	0.14149	$0.1413 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07187	$0.07193 \pm 0.00063$
$r_{143 \times 217}^{\text{CIB}}$	0.462	$0.41 \pm 0.22$	$\Omega_m h^3$	0.09602	$0.09593 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7792.63$ ; R-1 = 0.00888

$\chi^2_{\text{eff}}$ : BAO - DR7: 1.01 6DF: 0.02 DR9: 0.34 CMB - lowl: -7.29 CamSpec: 7797.75

## 2.16 base\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022320	$0.02239 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.526	$0.52^{+0.14}_{-0.12}$	$Y_P$	0.247818	$0.24785 \pm 0.00013$
$\Omega_c h^2$	0.11711	$0.1160 \pm 0.0027$	$c_{100}$	1.000597	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8263	$1.819 \pm 0.013$
$100\theta_{\text{MC}}$	1.04173	$1.04186 \pm 0.00063$	$c_{217}$	0.99629	$0.9964 \pm 0.0014$	Age/Gyr	13.765	$13.748 \pm 0.053$
$\tau$	0.0994	$0.127^{+0.041}_{-0.035}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.83	$1089.65 \pm 0.57$
$n_s$	0.9695	$0.9717 \pm 0.0089$	$A^{\text{kSZ}}$	0.00	$< 5.59$	$r_*$	145.21	$145.44 \pm 0.59$
$\ln(10^{10} A_s)$	3.104	$3.154^{+0.077}_{-0.065}$	$\beta_1^1$	0.60	$0.41 \pm 0.57$	$100\theta_*$	1.04187	$1.04199 \pm 0.00062$
$A_{100}^{\text{PS}}$	132	$159 \pm 60$	$\Omega_\Lambda$	0.7025	$0.709^{+0.017}_{-0.015}$	$z_{\text{drag}}$	1059.70	$1059.78 \pm 0.63$
$A_{143}^{\text{PS}}$	55.1	$50 \pm 10$	$\Omega_m$	0.2975	$0.291^{+0.015}_{-0.017}$	$r_{\text{drag}}$	147.91	$148.12 \pm 0.57$
$A_{217}^{\text{PS}}$	119.5	$107^{+20}_{-10}$	$\sigma_8$	0.8273	$0.845^{+0.029}_{-0.025}$	$k_D$	0.13986	$0.13970 \pm 0.00061$
$A_{143}^{\text{CIB}}$	1.83	$< 9.61$	$z_{\text{re}}$	11.78	$13.7^{+3.3}_{-2.2}$	$100\theta_D$	0.161157	$0.16112 \pm 0.00036$
$A_{217}^{\text{CIB}}$	25.5	$27^{+6}_{-9}$	$H_0$	68.62	$69.1 \pm 1.3$	$z_{\text{eq}}$	3332	$3307 \pm 59$
$A_{143}^{\text{tSZ}}$	8.53	—	$10^9 A_s$	2.228	$2.35 \pm 0.16$	$100\theta_{\text{eq}}$	0.8266	$0.832 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.852$	$\Omega_m h^2$	0.14007	$0.1391 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07244	$0.07285 \pm 0.00097$
$r_{143 \times 217}^{\text{CIB}}$	0.343	$0.39^{+0.20}_{-0.29}$	$\Omega_m h^3$	0.09612	$0.09611 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7796.87$ ; R-1 = 0.01363

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.82 CamSpec: 7799.27 Hubble - HST: 4.66

## 2.17 base\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022182	$0.02227 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.563	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247759	$0.24780 \pm 0.00014$
$\Omega_c h^2$	0.11851	$0.1172 \pm 0.0028$	$c_{100}$	1.000568	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8338	$1.824 \pm 0.014$
$100\theta_{\text{MC}}$	1.04151	$1.04165 \pm 0.00065$	$c_{217}$	0.99640	$0.9964 \pm 0.0014$	Age/Gyr	13.792	$13.773 \pm 0.056$
$\tau$	0.0951	$0.116^{+0.042}_{-0.036}$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.13	$1089.91 \pm 0.61$
$n_s$	0.9666	$0.9681^{+0.0089}_{-0.0099}$	$A^{\text{kSZ}}$	0.05	$< 5.78$	$r_*$	144.95	$145.23 \pm 0.61$
$\ln(10^{10} A_s)$	3.099	$3.135^{+0.080}_{-0.068}$	$\beta_1^1$	0.66	$0.45 \pm 0.57$	$100\theta_*$	1.04166	$1.04179 \pm 0.00064$
$A_{100}^{\text{PS}}$	154	$162 \pm 60$	$\Omega_\Lambda$	0.6937	$0.701^{+0.019}_{-0.016}$	$z_{\text{drag}}$	1059.47	$1059.57 \pm 0.65$
$A_{143}^{\text{PS}}$	66.4	$52 \pm 10$	$\Omega_m$	0.3063	$0.299^{+0.016}_{-0.019}$	$r_{\text{drag}}$	147.69	$147.94 \pm 0.59$
$A_{217}^{\text{PS}}$	121.0	$107^{+20}_{-10}$	$\sigma_8$	0.8299	$0.840^{+0.030}_{-0.026}$	$k_D$	0.13999	$0.13979 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.00	$< 9.87$	$z_{\text{re}}$	11.50	$12.9^{+3.6}_{-2.4}$	$100\theta_D$	0.161270	$0.16122 \pm 0.00037$
$A_{217}^{\text{CIB}}$	25.3	$28^{+6}_{-9}$	$H_0$	67.93	$68.5 \pm 1.3$	$z_{\text{eq}}$	3362	$3333 \pm 63$
$A_{143}^{\text{tSZ}}$	5.97	—	$10^9 A_s$	2.218	$2.30 \pm 0.16$	$100\theta_{\text{eq}}$	0.8205	$0.826 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.911	$> 0.851$	$\Omega_m h^2$	0.14134	$0.1401 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07193	$0.0724 \pm 0.0010$
$r_{143 \times 217}^{\text{CIB}}$	0.454	$0.40^{+0.21}_{-0.28}$	$\Omega_m h^3$	0.09601	$0.09599 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 8220.61$ ; R-1 = 0.00759

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.50 CamSpec: 7798.56 SN - SNLS: 429.07

## 2.18 base\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022143	$0.02214 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.526	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247743	$0.24774 \pm 0.00014$
$\Omega_c h^2$	0.11922	$0.1188 \pm 0.0029$	$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8352	$1.831 \pm 0.014$
$100\theta_{\text{MC}}$	1.04139	$1.04144 \pm 0.00066$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	Age/Gyr	13.802	$13.799 \pm 0.056$
$\tau$	0.0963	$0.103 \pm 0.038$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.24	$1090.21 \pm 0.62$
$n_s$	0.9646	$0.9639^{+0.0088}_{-0.0098}$	$A^{\text{ksZ}}$	0.00	$< 5.91$	$r_*$	144.80	$144.92 \pm 0.63$
$\ln(10^{10} A_s)$	3.102	$3.113^{+0.079}_{-0.071}$	$\beta_1^1$	0.66	$0.50 \pm 0.57$	$100\theta_*$	1.04154	$1.04159 \pm 0.00065$
$A_{100}^{\text{PS}}$	134	$167 \pm 60$	$\Omega_\Lambda$	0.6893	$0.691^{+0.020}_{-0.018}$	$z_{\text{drag}}$	1059.44	$1059.39 \pm 0.64$
$A_{143}^{\text{PS}}$	57.7	$53 \pm 10$	$\Omega_m$	0.3107	$0.309 \pm 0.018$	$r_{\text{drag}}$	147.54	$147.67 \pm 0.61$
$A_{217}^{\text{PS}}$	120.7	$107^{+20}_{-10}$	$\sigma_8$	0.8331	$0.836 \pm 0.027$	$k_D$	0.14011	$0.13997 \pm 0.00063$
$A_{143}^{\text{CIB}}$	1.29	$< 10.1$	$z_{\text{re}}$	11.63	$12.0^{+3.8}_{-2.6}$	$100\theta_D$	0.161283	$0.16132 \pm 0.00037$
$A_{217}^{\text{CIB}}$	25.5	$28^{+6}_{-9}$	$H_0$	67.60	$67.8 \pm 1.4$	$z_{\text{eq}}$	3378	$3367 \pm 65$
$A_{143}^{\text{tSZ}}$	8.54	—	$10^9 A_s$	2.225	$2.26 \pm 0.16$	$100\theta_{\text{eq}}$	0.8174	$0.820 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.890	$> 0.851$	$\Omega_m h^2$	0.14201	$0.1415 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07168	$0.0718 \pm 0.0010$
$r_{143 \times 217}^{\text{CIB}}$	0.369	$0.41 \pm 0.22$	$\Omega_m h^3$	0.09601	$0.09593 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7921.53$ ; R-1 = 0.00618

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.12 CamSpec: 7797.46 SN - Union2.1: 130.43

## 2.19 base\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02254	$0.02265 \pm 0.00051$	$z_{\text{re}}$	10.77	$10.7 \pm 1.1$	$100\theta_*$	1.04002	$1.0403 \pm 0.0023$
$\Omega_c h^2$	0.11523	$0.1137 \pm 0.0046$	$H_0$	68.87	$69.7 \pm 2.2$	$z_{\text{drag}}$	1060.09	$1060.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.03990	$1.0402 \pm 0.0023$	$10^9 A_s$	2.218	$2.203^{+0.065}_{-0.073}$	$r_{\text{drag}}$	148.16	$148.5 \pm 1.2$
$\tau$	0.0888	$0.089^{+0.013}_{-0.015}$	$\Omega_m h^2$	0.13842	$0.1370 \pm 0.0044$	$k_D$	0.13976	$0.1395 \pm 0.0014$
$n_s$	0.9723	$0.974 \pm 0.013$	$\Omega_m h^3$	0.09533	$0.0954 \pm 0.0018$	$100\theta_D$	0.16063	$0.16061 \pm 0.00051$
$\ln(10^{10} A_s)$	3.0993	$3.092 \pm 0.031$	$Y_p$	0.247913	$0.24796 \pm 0.00021$	$z_{\text{eq}}$	3292	$3257 \pm 110$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8572	$1.844 \pm 0.031$	$100\theta_{\text{eq}}$	0.8332	$0.841 \pm 0.021$
$\Omega_\Lambda$	0.7082	$0.717^{+0.028}_{-0.024}$	Age/Gyr	13.788	$13.76 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07262	$0.0733^{+0.0016}_{-0.0018}$
$\Omega_m$	0.2918	$0.283^{+0.024}_{-0.028}$	$z_*$	1089.39	$1089.13 \pm 0.83$			
$\sigma_8$	0.8169	$0.808 \pm 0.023$	$r_*$	145.53	$145.9 \pm 1.2$			

Best-fit  $\chi^2_{\text{eff}} = 7557.87$ ; R-1 = 0.01345

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.87



## 2.20 base\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022516	$0.02249 \pm 0.00044$	$z_{\text{re}}$	10.77	$10.5 \pm 1.1$	$100\theta_*$	1.04006	$1.0397 \pm 0.0021$
$\Omega_c h^2$	0.11629	$0.1160 \pm 0.0025$	$H_0$	68.47	$68.45 \pm 0.96$	$z_{\text{drag}}$	1060.09	$1060.0 \pm 1.1$
$100\theta_{\text{MC}}$	1.03995	$1.0396 \pm 0.0021$	$10^9 A_s$	2.220	$2.206 \pm 0.065$	$r_{\text{drag}}$	147.91	$148.03 \pm 0.92$
$\tau$	0.0885	$0.086^{+0.012}_{-0.014}$	$\Omega_m h^2$	0.13945	$0.1391 \pm 0.0026$	$k_D$	0.14001	$0.1399 \pm 0.0012$
$n_s$	0.9697	$0.969 \pm 0.010$	$\Omega_m h^3$	0.09549	$0.0952 \pm 0.0018$	$100\theta_D$	0.16064	$0.16064 \pm 0.00051$
$\ln(10^{10} A_s)$	3.1000	$3.093 \pm 0.030$	$Y_P$	0.247902	$0.24789 \pm 0.00019$	$z_{\text{eq}}$	3317	$3309 \pm 63$
$A_{\text{tSZ}}$	0.83	—	$10^9 A_s e^{-2\tau}$	1.8598	$1.856 \pm 0.023$	$100\theta_{\text{eq}}$	0.8285	$0.830 \pm 0.010$
$\Omega_\Lambda$	0.7026	$0.703 \pm 0.012$	Age/Gyr	13.795	$13.807 \pm 0.090$	$r_{\text{drag}}/D_V(0.57)$	0.07228	$0.07230 \pm 0.00070$
$\Omega_m$	0.2974	$0.297 \pm 0.012$	$z_*$	1089.51	$1089.53 \pm 0.54$			
$\sigma_8$	0.8204	$0.816 \pm 0.018$	$r_*$	145.27	$145.38 \pm 0.81$			

Best-fit  $\chi^2_{\text{eff}} = 7559.51$ ; R-1 = 0.01177

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.07 DR7: 0.34 DR9: 0.88 CMB - WMAP: 7558.22

## 2.21 base\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022987	$0.02293 \pm 0.00047$	$z_{\text{re}}$	11.15	$10.8 \pm 1.2$	$100\theta_*$	1.04152	$1.0414 \pm 0.0021$
$\Omega_c h^2$	0.11062	$0.1103 \pm 0.0037$	$H_0$	71.50	$71.6 \pm 1.7$	$z_{\text{drag}}$	1060.73	$1060.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04144	$1.0413 \pm 0.0021$	$10^9 A_s$	2.221	$2.201 \pm 0.072$	$r_{\text{drag}}$	148.93	$149.1 \pm 1.1$
$\tau$	0.0964	$0.093^{+0.014}_{-0.016}$	$\Omega_m h^2$	0.13425	$0.1339 \pm 0.0036$	$k_D$	0.13928	$0.1391 \pm 0.0013$
$n_s$	0.9826	$0.982 \pm 0.012$	$\Omega_m h^3$	0.09599	$0.0958 \pm 0.0018$	$100\theta_D$	0.16045	$0.16053 \pm 0.00050$
$\ln(10^{10} A_s)$	3.1004	$3.091 \pm 0.032$	$Y_P$	0.248100	$0.24808 \pm 0.00020$	$z_{\text{eq}}$	3193	$3184 \pm 87$
$A_{\text{tSZ}}$	1.15	—	$10^9 A_s e^{-2\tau}$	1.8312	$1.827 \pm 0.028$	$100\theta_{\text{eq}}$	0.8552	$0.857 \pm 0.017$
$\Omega_\Lambda$	0.7374	$0.738^{+0.020}_{-0.017}$	Age/Gyr	13.674	$13.679 \pm 0.098$	$r_{\text{drag}}/D_V(0.57)$	0.07461	$0.0747 \pm 0.0014$
$\Omega_m$	0.2626	$0.262^{+0.017}_{-0.020}$	$z_*$	1088.45	$1088.49 \pm 0.66$			
$\sigma_8$	0.8019	$0.797 \pm 0.022$	$r_*$	146.42	$146.6 \pm 1.0$			

Best-fit  $\chi^2_{\text{eff}} = 7559.84$ ; R-1 = 0.01836

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.86 Hubble - HST: 0.98

## 2.22 base\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022740	$0.02281 \pm 0.00050$	$z_{\text{re}}$	11.00	$10.8 \pm 1.2$	$100\theta_*$	1.04072	$1.0409 \pm 0.0022$
$\Omega_c h^2$	0.11203	$0.1111 \pm 0.0039$	$H_0$	70.47	$71.0 \pm 1.9$	$z_{\text{drag}}$	1060.28	$1060.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04062	$1.0408 \pm 0.0022$	$10^9 A_s$	2.217	$2.197^{+0.067}_{-0.075}$	$r_{\text{drag}}$	148.82	$149.0 \pm 1.1$
$\tau$	0.0933	$0.091^{+0.013}_{-0.016}$	$\Omega_m h^2$	0.13542	$0.1345 \pm 0.0038$	$k_D$	0.13922	$0.1391 \pm 0.0013$
$n_s$	0.9784	$0.979 \pm 0.013$	$\Omega_m h^3$	0.09543	$0.0954 \pm 0.0018$	$100\theta_D$	0.16059	$0.16058 \pm 0.00051$
$\ln(10^{10} A_s)$	3.0986	$3.089 \pm 0.032$	$Y_P$	0.247996	$0.24802 \pm 0.00021$	$z_{\text{eq}}$	3220	$3199 \pm 92$
$A_{\text{tSZ}}$	0.23	—	$10^9 A_s e^{-2\tau}$	1.8394	$1.830 \pm 0.028$	$100\theta_{\text{eq}}$	0.8482	$0.853 \pm 0.019$
$\Omega_\Lambda$	0.7273	$0.732^{+0.023}_{-0.020}$	Age/Gyr	13.731	$13.71 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07388	$0.0743^{+0.0014}_{-0.0016}$
$\Omega_m$	0.2727	$0.268 \pm 0.021$	$z_*$	1088.86	$1088.71 \pm 0.75$			
$\sigma_8$	0.8060	$0.798 \pm 0.022$	$r_*$	146.24	$146.5 \pm 1.0$			

Best-fit  $\chi^2_{\text{eff}} = 7984.81$ ; R-1 = 0.01451

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.15 SN - SNLS: 426.66

## 2.23 base\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022670	$0.02267 \pm 0.00049$	$z_{\text{re}}$	10.99	$10.7 \pm 1.1$	$100\theta_*$	1.04041	$1.0404 \pm 0.0022$
$\Omega_c h^2$	0.11388	$0.1133 \pm 0.0040$	$H_0$	69.61	$69.8 \pm 1.9$	$z_{\text{drag}}$	1060.28	$1060.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.04030	$1.0403 \pm 0.0022$	$10^9 A_s$	2.219	$2.202 \pm 0.068$	$r_{\text{drag}}$	148.39	$148.6 \pm 1.1$
$\tau$	0.0923	$0.089^{+0.013}_{-0.015}$	$\Omega_m h^2$	0.13720	$0.1367 \pm 0.0040$	$k_D$	0.13962	$0.1394 \pm 0.0013$
$n_s$	0.9736	$0.974 \pm 0.012$	$\Omega_m h^3$	0.09550	$0.0954 \pm 0.0018$	$100\theta_D$	0.16057	$0.16061 \pm 0.00051$
$\ln(10^{10} A_s)$	3.0998	$3.091 \pm 0.031$	$Y_P$	0.247967	$0.24796 \pm 0.00021$	$z_{\text{eq}}$	3263	$3250 \pm 95$
$A_{\text{tSZ}}$	1.23	—	$10^9 A_s e^{-2\tau}$	1.8450	$1.842 \pm 0.029$	$100\theta_{\text{eq}}$	0.8395	$0.842 \pm 0.019$
$\Omega_\Lambda$	0.7169	$0.719^{+0.024}_{-0.022}$	Age/Gyr	13.757	$13.75 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07317	$0.0734^{+0.0015}_{-0.0016}$
$\Omega_m$	0.2831	$0.281^{+0.022}_{-0.024}$	$z_*$	1089.11	$1089.08 \pm 0.76$			
$\sigma_8$	0.8122	$0.807 \pm 0.022$	$r_*$	145.80	$146.0 \pm 1.1$			

Best-fit  $\chi^2_{\text{eff}} = 7688.00$ ; R-1 = 0.01070

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.10 SN - Union2.1: 129.91

## 2.24 base\_planck\_tauprior

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021949	$0.02192 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.540	$0.54^{+0.13}_{-0.12}$	$Y_{\text{P}}$	0.247659	$0.24765 \pm 0.00012$
$\Omega_c h^2$	0.12202	$0.1221 \pm 0.0029$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8489	$1.847 \pm 0.014$
$100\theta_{\text{MC}}$	1.04105	$1.04106 \pm 0.00065$	$c_{217}$	0.99640	$0.9964 \pm 0.0014$	Age/Gyr	13.8437	$13.846 \pm 0.049$
$\tau$	0.0913	$0.093 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.74	$1090.79 \pm 0.55$
$n_s$	0.9554	$0.9529 \pm 0.0080$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.22	$144.23 \pm 0.64$
$\ln(10^{10} A_s)$	3.0998	$3.101 \pm 0.025$	$\beta_1^1$	0.68	$0.59 \pm 0.57$	$100\theta_*$	1.04121	$1.04123 \pm 0.00064$
$A_{100}^{\text{PS}}$	155	$177 \pm 60$	$\Omega_{\Lambda}$	0.6715	$0.671^{+0.020}_{-0.017}$	$z_{\text{drag}}$	1059.17	$1059.12 \pm 0.56$
$A_{143}^{\text{PS}}$	59.5	$55 \pm 10$	$\Omega_{\text{m}}$	0.3285	$0.329^{+0.017}_{-0.020}$	$r_{\text{drag}}$	147.02	$147.04 \pm 0.63$
$A_{217}^{\text{PS}}$	118.6	$106^{+20}_{-20}$	$\sigma_8$	0.8391	$0.839 \pm 0.014$	$k_{\text{D}}$	0.14051	$0.14046 \pm 0.00066$
$A_{143}^{\text{CIB}}$	3.11	$< 11.3$	$z_{\text{re}}$	11.34	$11.4 \pm 1.1$	$100\theta_{\text{D}}$	0.161422	$0.16147 \pm 0.00034$
$A_{217}^{\text{CIB}}$	27.0	$30^{+6}_{-9}$	$H_0$	66.35	$66.3 \pm 1.3$	$z_{\text{eq}}$	3440	$3441 \pm 65$
$A_{143}^{\text{tSZ}}$	6.92	—	$10^9 A_s$	2.219	$2.223 \pm 0.055$	$100\theta_{\text{eq}}$	0.8055	$0.806 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.847$	$\Omega_{\text{m}} h^2$	0.14462	$0.1446 \pm 0.0027$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07073	$0.07073 \pm 0.00094$
$r_{143 \times 217}^{\text{CIB}}$	0.300	$0.45 \pm 0.22$	$\Omega_{\text{m}} h^3$	0.09596	$0.09591 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 7797.31$ ; R-1 = 0.00709

$\chi_{\text{eff}}^2$ : CMB - CamSpec: 7796.66

## 2.25 base\_planck\_tauprior\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022083	$0.02211 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.524	$0.53 \pm 0.12$	$Y_P$	0.247717	$0.24773 \pm 0.00011$
$\Omega_c h^2$	0.11962	$0.1194 \pm 0.0021$	$c_{100}$	1.000606	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8351	$1.834 \pm 0.011$
$100\theta_{\text{MC}}$	1.04129	$1.04134 \pm 0.00060$	$c_{217}$	0.99630	$0.9964 \pm 0.0014$	Age/Gyr	13.8133	$13.807 \pm 0.043$
$\tau$	0.0870	$0.090 \pm 0.012$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.354	$1090.30 \pm 0.46$
$n_s$	0.9585	$0.9591 \pm 0.0070$	$A^{\text{kSZ}}$	7.51	—	$r_*$	144.74	$144.78 \pm 0.49$
$\ln(10^{10} A_s)$	3.0838	$3.090 \pm 0.022$	$\beta_1^1$	0.60	$0.49 \pm 0.56$	$100\theta_*$	1.04144	$1.04150 \pm 0.00059$
$A_{100}^{\text{PS}}$	127	$175 \pm 60$	$\Omega_\Lambda$	0.6865	$0.688_{-0.013}^{+0.014}$	$z_{\text{drag}}$	1059.32	$1059.36 \pm 0.56$
$A_{143}^{\text{PS}}$	42.5	$52 \pm 10$	$\Omega_m$	0.3135	$0.312_{-0.014}^{+0.013}$	$r_{\text{drag}}$	147.50	$147.54 \pm 0.50$
$A_{217}^{\text{PS}}$	106.2	$103_{-20}^{+20}$	$\sigma_8$	0.8257	$0.8266 \pm 0.0097$	$k_D$	0.14011	$0.14009 \pm 0.00057$
$A_{143}^{\text{CIB}}$	2.86	$< 11.9$	$z_{\text{re}}$	10.86	$11.1 \pm 1.0$	$100\theta_D$	0.161340	$0.16132 \pm 0.00032$
$A_{217}^{\text{CIB}}$	26.3	$30_{-9}^{+6}$	$H_0$	67.38	$67.52 \pm 0.98$	$z_{\text{eq}}$	3386.0	$3381 \pm 48$
$A_{143}^{\text{tSZ}}$	8.28	—	$10^9 A_s$	2.184	$2.197_{-0.053}^{+0.047}$	$100\theta_{\text{eq}}$	0.8157	$0.8168 \pm 0.0092$
$r_{143 \times 217}^{\text{PS}}$	0.883	$> 0.840$	$\Omega_m h^2$	0.14235	$0.1421 \pm 0.0020$	$r_{\text{drag}}/D_V(0.57)$	0.07152	$0.07162 \pm 0.00074$
$r_{143 \times 217}^{\text{CIB}}$	0.366	$0.45_{-0.22}^{+0.26}$	$\Omega_m h^3$	0.09591	$0.09595 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 7808.59$ ; R-1 = 0.01313

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.93 CamSpec: 7797.84

## 2.26 base\_planck\_tauprior\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021937	$0.02195 \pm 0.00027$	$A_{148}^{\text{PS, ACT}}$	10.21	$10.53 \pm 0.59$	$z_{\text{re}}$	11.42	$11.5 \pm 1.1$
$\Omega_c h^2$	0.12247	$0.1222 \pm 0.0028$	$A_{218}^{\text{PS, ACT}}$	75.17	$76.7 \pm 4.5$	$H_0$	66.17	$66.3 \pm 1.2$
$100\theta_{\text{MC}}$	1.04097	$1.04106 \pm 0.00064$	$A_{95}^{\text{PS, SPT}}$	7.06	$7.64^{+1.4}_{-1.6}$	$10^9 A_s$	2.220	$2.227 \pm 0.055$
$\tau$	0.0921	$0.094 \pm 0.013$	$A_{150}^{\text{PS, SPT}}$	9.67	$10.03 \pm 0.51$	$\Omega_m h^2$	0.14505	$0.1448 \pm 0.0027$
$n_s$	0.9506	$0.9510 \pm 0.0077$	$A_{220}^{\text{PS, SPT}}$	71.99	$74.2 \pm 4.5$	$\Omega_m h^3$	0.09598	$0.09599 \pm 0.00056$
$\ln(10^{10} A_s)$	3.1003	$3.103 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.812	$0.832 \pm 0.089$	$Y_p$	0.247654	$0.24766 \pm 0.00012$
$A_{100}^{\text{PS}}$	207	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.565	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8468	$1.845 \pm 0.014$
$A_{143}^{\text{PS}}$	75.2	$75.2 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9100	$0.937 \pm 0.023$	Age/Gyr	13.8488	$13.843 \pm 0.047$
$A_{217}^{\text{PS}}$	61.6	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.415	$0.43 \pm 0.19$	$z_*$	1090.79	$1090.76 \pm 0.54$
$A_{143}^{\text{CIB}}$	3.35	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.848	$0.85 \pm 0.20$	$r_*$	144.12	$144.19 \pm 0.63$
$A_{217}^{\text{CIB}}$	53.2	$49.5 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9900	$0.9910 \pm 0.0072$	$100\theta_*$	1.04114	$1.04123 \pm 0.00063$
$A^{\text{tSZ}}_{143}$	4.84	$2.45^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0003	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.17	$1059.19 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.832	$0.826^{+0.067}_{-0.076}$	$y_{148}^{\text{ACTe}}$	0.9864	$0.9874 \pm 0.0071$	$r_{\text{drag}}$	146.92	$146.99 \pm 0.62$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9594	$0.963 \pm 0.010$	$k_D$	0.14061	$0.14054 \pm 0.00065$
$\gamma^{\text{CIB}}$	0.668	$0.636 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9823	$0.982 \pm 0.019$	$100\theta_D$	0.161414	$0.16142 \pm 0.00032$
$c_{100}$	1.000581	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9819	$0.9858 \pm 0.0096$	$z_{\text{eq}}$	3451	$3444 \pm 64$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0142	$1.023 \pm 0.023$	$100\theta_{\text{eq}}$	0.8037	$0.805 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.427$	$\Omega_\Lambda$	0.6687	$0.670^{+0.020}_{-0.017}$	$r_{\text{drag}}/D_V(0.57)$	0.07058	$0.07071 \pm 0.00093$
$A^{\text{kSZ}}$	1.44	$5.41^{+2.7}_{-1.9}$	$\Omega_m$	0.3313	$0.330^{+0.017}_{-0.020}$			
$\beta_1^1$	0.47	$0.44 \pm 0.55$	$\sigma_8$	0.8393	$0.839 \pm 0.013$			

Best-fit  $\chi^2_{\text{eff}} = 8499.95$ ; R-1 = 0.00676

$\chi^2_{\text{eff}}$ : CMB - CamSpec: 7806.84 highL: 692.99

## 2.27 base\_planck\_tauprior\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022143	$0.02212 \pm 0.00025$	$A_{148}^{\text{PS, ACT}}$	10.40	$10.66 \pm 0.58$	$z_{\text{re}}$	11.54	$11.2^{+1.1}_{-0.97}$
$\Omega_c h^2$	0.11935	$0.1195 \pm 0.0021$	$A_{218}^{\text{PS, ACT}}$	76.39	$76.9 \pm 4.5$	$H_0$	67.54	$67.5^{+1.1}_{-0.93}$
$100\theta_{\text{MC}}$	1.04132	$1.04134 \pm 0.00060$	$A_{95}^{\text{PS, SPT}}$	7.38	$7.87^{+1.4}_{-1.6}$	$10^9 A_s$	2.2180	$2.201 \pm 0.048$
$\tau$	0.0952	$0.091 \pm 0.012$	$A_{150}^{\text{PS, SPT}}$	9.92	$10.20 \pm 0.51$	$\Omega_m h^2$	0.14214	$0.1423 \pm 0.0020$
$n_s$	0.9583	$0.9574^{+0.0071}_{-0.0064}$	$A_{220}^{\text{PS, SPT}}$	73.39	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09600	$0.09599 \pm 0.00056$
$\ln(10^{10} A_s)$	3.0992	$3.091 \pm 0.022$	$r_{95 \times 150}^{\text{PS}}$	0.807	$0.830 \pm 0.087$	$Y_p$	0.247743	$0.24773 \pm 0.00011$
$A_{100}^{\text{PS}}$	209	$217 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.554	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8335	$1.834 \pm 0.011$
$A_{143}^{\text{PS}}$	74.0	$74.3 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9071	$0.933^{+0.022}_{-0.026}$	Age/Gyr	13.8050	$13.807 \pm 0.042$
$A_{217}^{\text{PS}}$	61.4	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.422	$0.43^{+0.18}_{-0.22}$	$z_*$	1090.254	$1090.30^{+0.43}_{-0.49}$
$A_{143}^{\text{CIB}}$	3.32	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.848	$0.84^{+0.19}_{-0.22}$	$r_*$	144.762	$144.73 \pm 0.49$
$A_{217}^{\text{CIB}}$	52.3	$50.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9918 \pm 0.0074$	$100\theta_*$	1.04147	$1.04149 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.75	$2.45^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.44	$1059.40 \pm 0.53$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.828^{+0.068}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9872	$0.9882 \pm 0.0073$	$r_{\text{drag}}$	147.508	$147.49 \pm 0.50$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9609	$0.964 \pm 0.010$	$k_D$	0.14015	$0.14016 \pm 0.00056$
$\gamma^{\text{CIB}}$	0.652	$0.641 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9845	$0.984^{+0.019}_{-0.021}$	$100\theta_D$	0.161267	$0.16130 \pm 0.00031$
$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9851	$0.9877 \pm 0.0096$	$z_{\text{eq}}$	3381.0	$3385 \pm 48$
$c_{217}$	0.99728	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0177	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8168	$0.8162 \pm 0.0091$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.385$	$\Omega_\Lambda$	0.6884	$0.687^{+0.015}_{-0.012}$	$r_{\text{drag}}/D_V(0.57)$	0.07162	$0.07158 \pm 0.00073$
$A^{\text{kSZ}}$	0.98	$4.77^{+2.5}_{-2.0}$	$\Omega_m$	0.3116	$0.313^{+0.012}_{-0.015}$			
$\beta_1^1$	0.43	$0.37 \pm 0.54$	$\sigma_8$	0.8309	$0.8273 \pm 0.0096$			

Best-fit  $\chi_{\text{eff}}^2 = 8509.56$ ; R-1 = 0.03378

$\chi_{\text{eff}}^2$ : CMB - lensing: 10.15 CamSpec: 7807.69 highL: 691.43



### 3 Alens

#### 3.1 base\_Alens\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022545	$0.02245 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.174	$0.37^{+0.17}_{-0.30}$	$\Omega_m h^3$	0.09648	$0.09633 \pm 0.00064$
$\Omega_c h^2$	0.11649	$0.1168 \pm 0.0030$	$\gamma^{\text{CIB}}$	0.539	$0.53 \pm 0.12$	$Y_P$	0.247914	$0.24787 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04187	$1.04181 \pm 0.00069$	$c_{100}$	1.000606	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8264	$1.824 \pm 0.014$
$\tau$	0.0834	$0.087 \pm 0.013$	$c_{217}$	0.99624	$0.9963 \pm 0.0014$	Age/Gyr	13.736	$13.747 \pm 0.061$
$A_L$	1.252	$1.22^{+0.11}_{-0.13}$	$\xi^{\text{tSZ-CIB}}$	0.27	—	$z_*$	1089.49	$1089.64 \pm 0.65$
$n_s$	0.9724	$0.9691 \pm 0.0085$	$A^{\text{kSZ}}$	0.00	$< 5.11$	$r_*$	145.20	$145.20 \pm 0.63$
$\ln(10^{10} A_s)$	3.0718	$3.077 \pm 0.025$	$\beta_1^1$	0.50	$0.42 \pm 0.57$	$100\theta_*$	1.04198	$1.04194 \pm 0.00067$
$A_{100}^{\text{PS}}$	121	$155 \pm 60$	$\Omega_\Lambda$	0.7073	$0.705^{+0.020}_{-0.017}$	$z_{\text{drag}}$	1060.16	$1059.97 \pm 0.70$
$A_{143}^{\text{PS}}$	55.0	$50 \pm 10$	$\Omega_m$	0.2927	$0.295^{+0.017}_{-0.020}$	$r_{\text{drag}}$	147.82	$147.85 \pm 0.60$
$A_{217}^{\text{PS}}$	121.0	$107^{+20}_{-10}$	$\sigma_8$	0.8120	$0.814 \pm 0.014$	$k_D$	0.14012	$0.14002 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.00	$< 9.33$	$z_{\text{re}}$	10.33	$10.6 \pm 1.1$	$100\theta_D$	0.160889	$0.16101 \pm 0.00038$
$A_{217}^{\text{CIB}}$	22.8	$27^{+6}_{-8}$	$H_0$	69.07	$68.9 \pm 1.5$	$z_{\text{eq}}$	3322	$3328 \pm 66$
$A_{143}^{\text{tSZ}}$	7.27	—	$10^9 A_s$	2.158	$2.171 \pm 0.055$	$100\theta_{\text{eq}}$	0.8291	$0.828 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.950	$> 0.855$	$\Omega_m h^2$	0.13968	$0.1399 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07270	$0.0726 \pm 0.0011$

Best-fit  $\chi_{\text{eff}}^2 = 9800.63$ ; R-1 = 0.00843

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.32 lowl: -8.66 CamSpec: 7794.32

### 3.2 base\_Alens\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022369	$0.02233 \pm 0.00033$	$r_{143 \times 217}^{\text{CIB}}$	0.298	$0.43^{+0.22}_{-0.27}$	$\Omega_m h^3$	0.09609	$0.09601 \pm 0.00059$
$\Omega_c h^2$	0.11653	$0.1165^{+0.0027}_{-0.0034}$	$\gamma^{\text{CIB}}$	0.540	$0.53 \pm 0.12$	$Y_P$	0.247839	$0.24782 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04169	$1.04170 \pm 0.00067$	$c_{100}$	1.000599	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8239	$1.821 \pm 0.014$
$\tau$	0.0798	$0.087 \pm 0.013$	$c_{217}$	0.99619	$0.9963 \pm 0.0014$	Age/Gyr	13.759	$13.761 \pm 0.057$
$A_L$	1.076	$1.066 \pm 0.069$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.72	$1089.77 \pm 0.62$
$n_s$	0.9695	$0.9685 \pm 0.0084$	$A^{\text{kSZ}}$	0.69	$< 6.14$	$r_*$	145.33	$145.36 \pm 0.64$
$\ln(10^{10} A_s)$	3.0631	$3.076 \pm 0.025$	$\beta_1^1$	0.50	$0.42 \pm 0.55$	$100\theta_*$	1.04183	$1.04183 \pm 0.00066$
$A_{100}^{\text{PS}}$	148	$166 \pm 60$	$\Omega_\Lambda$	0.7057	$0.705^{+0.021}_{-0.016}$	$z_{\text{drag}}$	1059.74	$1059.67 \pm 0.64$
$A_{143}^{\text{PS}}$	50.1	$50 \pm 10$	$\Omega_m$	0.2943	$0.295^{+0.016}_{-0.021}$	$r_{\text{drag}}$	148.01	$148.06 \pm 0.62$
$A_{217}^{\text{PS}}$	114.9	$103^{+20}_{-10}$	$\sigma_8$	0.8091	$0.813 \pm 0.014$	$k_D$	0.13980	$0.13971^{+0.00068}_{-0.00060}$
$A_{143}^{\text{CIB}}$	4.65	$< 10.5$	$z_{\text{re}}$	10.06	$10.7^{+1.2}_{-1.0}$	$100\theta_D$	0.161100	$0.16116 \pm 0.00036$
$A_{217}^{\text{CIB}}$	26.7	$29^{+6}_{-8}$	$H_0$	68.86	$68.9 \pm 1.4$	$z_{\text{eq}}$	3319	$3318^{+61}_{-75}$
$A^{\text{tSZ}}_{143}$	7.05	—	$10^9 A_s$	2.139	$2.167 \pm 0.054$	$100\theta_{\text{eq}}$	0.8291	$0.829^{+0.015}_{-0.013}$
$r_{143 \times 217}^{\text{PS}}$	0.897	$> 0.846$	$\Omega_m h^2$	0.13955	$0.1395^{+0.0025}_{-0.0031}$	$r_{\text{drag}}/D_V(0.57)$	0.07262	$0.0726^{+0.0012}_{-0.0011}$

Best-fit  $\chi^2_{\text{eff}} = 9814.93$ ; R-1 = 0.05928

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.63 lensing: 9.74 lowl: -8.49 CamSpec: 7798.41

### 3.3 base\_Alens\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022470	$0.02237 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.346	$0.38^{+0.18}_{-0.29}$	$\Omega_m h^3$	0.09646	$0.09628 \pm 0.00061$
$\Omega_c h^2$	0.11754	$0.1176 \pm 0.0018$	$\gamma^{\text{CIB}}$	0.533	$0.53 \pm 0.12$	$Y_{\text{P}}$	0.247882	$0.24784 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04172	$1.04167 \pm 0.00058$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8305	$1.8278 \pm 0.0094$
$\tau$	0.0838	$0.086 \pm 0.013$	$c_{217}$	0.99618	$0.9963 \pm 0.0014$	Age/Gyr	13.7526	$13.764 \pm 0.042$
$A_{\text{L}}$	1.230	$1.20 \pm 0.10$	$\xi^{\text{tSZ-CIB}}$	0.03	—	$z_*$	1089.681	$1089.81 \pm 0.44$
$n_s$	0.9699	$0.9669 \pm 0.0060$	$A^{\text{kSZ}}$	0.00	$< 5.18$	$r_*$	144.984	$145.03 \pm 0.42$
$\ln(10^{10} A_s)$	3.0747	$3.077 \pm 0.025$	$\beta_1^1$	0.62	$0.44 \pm 0.56$	$100\theta_*$	1.04183	$1.04180 \pm 0.00057$
$A_{100}^{\text{PS}}$	114	$157 \pm 60$	$\Omega_{\Lambda}$	0.7010	$0.700^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1060.09	$1059.85 \pm 0.61$
$A_{143}^{\text{PS}}$	51.4	$50 \pm 10$	$\Omega_{\text{m}}$	0.2990	$0.300 \pm 0.011$	$r_{\text{drag}}$	147.625	$147.71 \pm 0.45$
$A_{217}^{\text{PS}}$	122.0	$107^{+20}_{-10}$	$\sigma_8$	0.8163	$0.817 \pm 0.012$	$k_{\text{D}}$	0.14028	$0.14011 \pm 0.00057$
$A_{143}^{\text{CIB}}$	0.00	$< 9.46$	$z_{\text{re}}$	10.40	$10.6 \pm 1.1$	$100\theta_{\text{D}}$	0.160932	$0.16106 \pm 0.00035$
$A_{217}^{\text{CIB}}$	22.7	$27^{+6}_{-8}$	$H_0$	68.58	$68.46 \pm 0.85$	$z_{\text{eq}}$	3345.5	$3346 \pm 40$
$A_{143}^{\text{tSZ}}$	8.92	—	$10^9 A_s$	2.164	$2.170 \pm 0.055$	$100\theta_{\text{eq}}$	0.8245	$0.8243 \pm 0.0077$
$r_{143 \times 217}^{\text{PS}}$	0.925	$> 0.855$	$\Omega_{\text{m}} h^2$	0.14065	$0.1407 \pm 0.0017$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07232	$0.07227 \pm 0.00062$

Best-fit  $\chi^2_{\text{eff}} = 9802.10$ ; R-1 = 0.00882

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.93 DR7: 0.33 6DF: 0.08 CMB - lowLike: 2014.31 lowl: -8.39 CamSpec: 7794.15

### 3.4 base\_Alens\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022662	$0.02272 \pm 0.00033$	$r_{143 \times 217}^{\text{CIB}}$	0.567	$0.36^{+0.15}_{-0.32}$	$\Omega_m h^3$	0.09654	$0.09655 \pm 0.00063$
$\Omega_c h^2$	0.11502	$0.1142 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.517	$0.53 \pm 0.12$	$Y_P$	0.247963	$0.24799 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04210	$1.04225 \pm 0.00066$	$c_{100}$	1.000606	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8201	$1.814 \pm 0.012$
$\tau$	0.0980	$0.090 \pm 0.013$	$c_{217}$	0.99631	$0.9963 \pm 0.0014$	Age/Gyr	13.710	$13.695 \pm 0.056$
$A_L$	1.244	$1.28^{+0.11}_{-0.13}$	$\xi^{\text{tSZ-CIB}}$	0.21	—	$z_*$	1089.22	$1089.09 \pm 0.57$
$n_s$	0.9762	$0.9759 \pm 0.0078$	$A^{\text{kSZ}}$	0.00	$< 4.87$	$r_*$	145.50	$145.68 \pm 0.56$
$\ln(10^{10} A_s)$	3.0975	$3.077 \pm 0.026$	$\beta_1^1$	0.44	$0.34 \pm 0.56$	$100\theta_*$	1.04221	$1.04235 \pm 0.00064$
$A_{100}^{\text{PS}}$	132	$150 \pm 60$	$\Omega_\Lambda$	0.7160	$0.721^{+0.016}_{-0.014}$	$z_{\text{drag}}$	1060.31	$1060.39 \pm 0.67$
$A_{143}^{\text{PS}}$	57.8	$47 \pm 10$	$\Omega_m$	0.2840	$0.279^{+0.014}_{-0.016}$	$r_{\text{drag}}$	148.09	$148.26 \pm 0.55$
$A_{217}^{\text{PS}}$	119.0	$106^{+20}_{-10}$	$\sigma_8$	0.8180	$0.806 \pm 0.014$	$k_D$	0.13993	$0.13979 \pm 0.00060$
$A_{143}^{\text{CIB}}$	0.00	$< 9.03$	$z_{\text{re}}$	11.50	$10.7 \pm 1.1$	$100\theta_D$	0.160819	$0.16080 \pm 0.00036$
$A_{217}^{\text{CIB}}$	23.0	$26^{+5}_{-8}$	$H_0$	69.79	$70.2 \pm 1.3$	$z_{\text{eq}}$	3290	$3271 \pm 57$
$A_{143}^{\text{tSZ}}$	6.09	—	$10^9 A_s$	2.214	$2.170^{+0.054}_{-0.061}$	$100\theta_{\text{eq}}$	0.8357	$0.840 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.901	$> 0.855$	$\Omega_m h^2$	0.13833	$0.1375 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07325	$0.07359 \pm 0.00097$

Best-fit  $\chi^2_{\text{eff}} = 9804.19$ ; R-1 = 0.01494

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.36 lowl: -8.63 CamSpec: 7794.80 Hubble - HST: 2.83

### 3.5 base\_Alens\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022726	$0.02261 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.093	$0.37^{+0.16}_{-0.31}$	$\Omega_m h^3$	0.09662	$0.09644 \pm 0.00063$
$\Omega_c h^2$	0.11469	$0.1150 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.533	$0.53 \pm 0.12$	$Y_P$	0.247990	$0.24794 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04215	$1.04208 \pm 0.00067$	$c_{100}$	1.000606	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8189	$1.817 \pm 0.013$
$\tau$	0.0973	$0.089 \pm 0.013$	$c_{217}$	0.99619	$0.9963 \pm 0.0014$	Age/Gyr	13.700	$13.715 \pm 0.059$
$A_L$	1.271	$1.26^{+0.11}_{-0.13}$	$\xi^{\text{tSZ-CIB}}$	0.27	—	$z_*$	1089.12	$1089.29 \pm 0.61$
$n_s$	0.9776	$0.9735 \pm 0.0081$	$A^{\text{kSZ}}$	0.00	$< 4.99$	$r_*$	145.54	$145.53 \pm 0.58$
$\ln(10^{10} A_s)$	3.0955	$3.077 \pm 0.026$	$\beta_1^1$	0.47	$0.37 \pm 0.56$	$100\theta_*$	1.04225	$1.04219 \pm 0.00066$
$A_{100}^{\text{PS}}$	108	$152 \pm 60$	$\Omega_\Lambda$	0.7181	$0.715^{+0.017}_{-0.016}$	$z_{\text{drag}}$	1060.47	$1060.21 \pm 0.69$
$A_{143}^{\text{PS}}$	50.6	$48 \pm 10$	$\Omega_m$	0.2819	$0.285 \pm 0.016$	$r_{\text{drag}}$	148.11	$148.14 \pm 0.57$
$A_{217}^{\text{PS}}$	120.7	$106^{+20}_{-10}$	$\sigma_8$	0.8161	$0.809 \pm 0.014$	$k_D$	0.13996	$0.13984 \pm 0.00061$
$A_{143}^{\text{CIB}}$	0.00	$< 9.15$	$z_{\text{re}}$	11.41	$10.7 \pm 1.1$	$100\theta_D$	0.160750	$0.16089 \pm 0.00037$
$A_{217}^{\text{CIB}}$	21.9	$27^{+5}_{-8}$	$H_0$	69.98	$69.7 \pm 1.4$	$z_{\text{eq}}$	3283	$3289 \pm 60$
$A^{\text{tSZ}}_{143}$	7.94	—	$10^9 A_s$	2.210	$2.170 \pm 0.057$	$100\theta_{\text{eq}}$	0.8372	$0.836 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.958	$> 0.855$	$\Omega_m h^2$	0.13806	$0.1383 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07338	$0.0732 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 10228.44$ ; R-1 = 0.01229

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.27 lowl: -8.76 CamSpec: 7795.03 SN - SNLS: 427.21

### 3.6 base\_Alens\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022599	$0.02249 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.000	$0.37^{+0.17}_{-0.30}$	$\Omega_m h^3$	0.09652	$0.09636 \pm 0.00063$
$\Omega_c h^2$	0.11599	$0.1164 \pm 0.0028$	$\gamma^{\text{CIB}}$	0.543	$0.53 \pm 0.12$	$Y_P$	0.247937	$0.24789 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04192	$1.04188 \pm 0.00067$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8241	$1.823 \pm 0.013$
$\tau$	0.0971	$0.087 \pm 0.013$	$c_{217}$	0.99617	$0.9963 \pm 0.0014$	Age/Gyr	13.726	$13.740 \pm 0.059$
$A_L$	1.235	$1.23^{+0.11}_{-0.13}$	$\xi^{\text{tSZ-CIB}}$	0.62	—	$z_*$	1089.39	$1089.56 \pm 0.62$
$n_s$	0.9744	$0.9701 \pm 0.0082$	$A^{\text{kSZ}}$	0.00	$< 5.09$	$r_*$	145.29	$145.28 \pm 0.60$
$\ln(10^{10} A_s)$	3.0980	$3.077 \pm 0.026$	$\beta_1^1$	0.48	$0.41 \pm 0.57$	$100\theta_*$	1.04204	$1.04200 \pm 0.00066$
$A_{100}^{\text{PS}}$	134	$155 \pm 60$	$\Omega_\Lambda$	0.7103	$0.707^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1060.24	$1060.03 \pm 0.69$
$A_{143}^{\text{PS}}$	58.9	$49 \pm 10$	$\Omega_m$	0.2897	$0.293^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.90	$147.92 \pm 0.58$
$A_{217}^{\text{PS}}$	122.9	$107^{+20}_{-10}$	$\sigma_8$	0.8213	$0.813 \pm 0.014$	$k_D$	0.14009	$0.13998 \pm 0.00061$
$A_{143}^{\text{CIB}}$	1.99	$< 9.32$	$z_{\text{re}}$	11.47	$10.6 \pm 1.1$	$100\theta_D$	0.160841	$0.16098 \pm 0.00037$
$A_{217}^{\text{CIB}}$	21.7	$27^{+5}_{-8}$	$H_0$	69.32	$69.1 \pm 1.4$	$z_{\text{eq}}$	3312	$3318 \pm 62$
$A_{143}^{\text{tSZ}}$	5.83	—	$10^9 A_s$	2.215	$2.170 \pm 0.056$	$100\theta_{\text{eq}}$	0.8313	$0.830 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.963	$> 0.855$	$\Omega_m h^2$	0.13923	$0.1395 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07288	$0.0728 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 9930.95$ ; R-1 = 0.00981

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.38 lowl: -8.49 CamSpec: 7794.47 SN - Union2.1: 129.98

### 3.7 base\_Alens\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022404	$0.02248 \pm 0.00033$	$\beta_1^1$	0.33	$0.24 \pm 0.56$	$\sigma_8$	0.8257	$0.811 \pm 0.014$
$\Omega_c h^2$	0.11750	$0.1165 \pm 0.0029$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.65 \pm 0.59$	$z_{\text{re}}$	11.66	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04174	$1.04187 \pm 0.00068$	$A_{218}^{\text{PS, ACT}}$	76.36	$77.0 \pm 4.6$	$H_0$	68.55	$69.0 \pm 1.4$
$\tau$	0.0981	$0.086 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.61	$7.93^{+1.4}_{-1.7}$	$10^9 A_s$	2.221	$2.164^{+0.051}_{-0.059}$
$A_L$	1.184	$1.23 \pm 0.11$	$A_{150}^{\text{PS, SPT}}$	10.03	$10.29 \pm 0.52$	$\Omega_m h^2$	0.14055	$0.1396 \pm 0.0027$
$n_s$	0.9655	$0.9670 \pm 0.0080$	$A_{220}^{\text{PS, SPT}}$	73.41	$74.7 \pm 4.6$	$\Omega_m h^3$	0.09635	$0.09635 \pm 0.00060$
$\ln(10^{10} A_s)$	3.1003	$3.074 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.799	$0.829 \pm 0.088$	$Y_p$	0.247854	$0.24788 \pm 0.00014$
$A_{100}^{\text{PS}}$	194	$201 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.547	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8248	$1.820 \pm 0.013$
$A_{143}^{\text{PS}}$	68.1	$67 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9076	$0.935 \pm 0.024$	Age/Gyr	13.758	$13.742 \pm 0.058$
$A_{217}^{\text{PS}}$	56.0	$54 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	$z_*$	1089.76	$1089.58 \pm 0.61$
$A_{143}^{\text{CIB}}$	3.25	$3.28 \pm 0.84$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.84 \pm 0.20$	$r_*$	145.04	$145.26 \pm 0.63$
$A_{217}^{\text{CIB}}$	53.0	$50.6 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9935	$0.9945 \pm 0.0074$	$100\theta_*$	1.04188	$1.04199 \pm 0.00066$
$A_{143}^{\text{tSZ}}$	4.67	$2.69^{+1.3}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0058	$1.009 \pm 0.014$	$z_{\text{drag}}$	1059.89	$1060.01 \pm 0.64$
$r_{143 \times 217}^{\text{PS}}$	0.804	$0.811 \pm 0.076$	$y_{148}^{\text{ACTe}}$	0.9900	$0.9911 \pm 0.0072$	$r_{\text{drag}}$	147.71	$147.91 \pm 0.60$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.925$	$y_{217}^{\text{ACTe}}$	0.9636	$0.967 \pm 0.010$	$k_D$	0.14014	$0.13998 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.671	$0.656 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9885	$0.989 \pm 0.020$	$100\theta_D$	0.161030	$0.16099 \pm 0.00035$
$c_{100}$	1.000593	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9894	$0.9930 \pm 0.0099$	$z_{\text{eq}}$	3343	$3320 \pm 65$
$c_{217}$	0.99732	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0200	$1.028 \pm 0.023$	$100\theta_{\text{eq}}$	0.8248	$0.830 \pm 0.013$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.340$	$\Omega_\Lambda$	0.7009	$0.707^{+0.019}_{-0.017}$	$r_{\text{drag}}/D_V(0.57)$	0.07233	$0.0727 \pm 0.0011$
$A^{\text{kSZ}}$	1.23	$4.51^{+2.6}_{-2.3}$	$\Omega_m$	0.2991	$0.293^{+0.017}_{-0.019}$			

Best-fit  $\chi_{\text{eff}}^2 = 10504.99$ ; R-1 =0.00568

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.67 lowl: -7.21 CamSpec: 7807.97 highL: 689.49

### 3.8 base\_Alens\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022356	$0.02239 \pm 0.00032$	$\beta_1^1$	0.28	$0.29^{+0.50}_{-0.62}$	$\sigma_8$	0.8043	$0.810 \pm 0.014$
$\Omega_c h^2$	0.11638	$0.1162^{+0.0027}_{-0.0034}$	$A_{148}^{\text{PS, ACT}}$	10.48	$10.70^{+0.55}_{-0.71}$	$z_{\text{re}}$	9.80	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04173	$1.04174 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	76.67	$77.0^{+5.1}_{-4.1}$	$H_0$	68.91	$69.0 \pm 1.4$
$\tau$	0.0769	$0.086 \pm 0.012$	$A_{95}^{\text{PS, SPT}}$	7.73	$7.88^{+1.2}_{-1.8}$	$10^9 A_s$	2.122	$2.161^{+0.048}_{-0.055}$
$A_L$	1.097	$1.080 \pm 0.070$	$A_{150}^{\text{PS, SPT}}$	10.05	$10.30 \pm 0.55$	$\Omega_m h^2$	0.13938	$0.1392^{+0.0025}_{-0.0031}$
$n_s$	0.9660	$0.9673 \pm 0.0082$	$A_{220}^{\text{PS, SPT}}$	73.75	$74.8^{+4.4}_{-5.3}$	$\Omega_m h^3$	0.09605	$0.09607 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0549	$3.073^{+0.022}_{-0.025}$	$r_{95 \times 150}^{\text{PS}}$	0.785	$> 0.799$	$Y_p$	0.247834	$0.24785 \pm 0.00014$
$A_{100}^{\text{PS}}$	203	$210 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.530	$0.58 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8194	$1.818^{+0.013}_{-0.016}$
$A_{143}^{\text{PS}}$	71.8	$70 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9085	$0.934 \pm 0.023$	Age/Gyr	13.758	$13.754^{+0.054}_{-0.061}$
$A_{217}^{\text{PS}}$	58.9	$56 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.423	$0.44 \pm 0.18$	$z_*$	1089.72	$1089.67^{+0.54}_{-0.67}$
$A_{143}^{\text{CIB}}$	3.08	$3.29 \pm 0.86$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.83 \pm 0.19$	$r_*$	145.38	$145.40^{+0.70}_{-0.63}$
$A_{217}^{\text{CIB}}$	52.1	$50.3 \pm 5.2$	$y_{148}^{\text{ACTs}}$	0.9921	$0.9941^{+0.0071}_{-0.0083}$	$100\theta_*$	1.04187	$1.04187 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.31	$2.68^{+1.3}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0046	$1.008 \pm 0.013$	$z_{\text{drag}}$	1059.70	$1059.77^{+0.68}_{-0.58}$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.818 \pm 0.074$	$y_{148}^{\text{ACTe}}$	0.9884	$0.9900^{+0.0066}_{-0.0080}$	$r_{\text{drag}}$	148.07	$148.08 \pm 0.62$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9630	$0.966 \pm 0.010$	$k_D$	0.13973	$0.13973 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.656	$0.649 \pm 0.084$	$y_{95}^{\text{SPT}}$	0.9860	$0.988 \pm 0.020$	$100\theta_D$	0.161128	$0.16110^{+0.00031}_{-0.00038}$
$c_{100}$	1.000596	$1.00059^{+0.00046}_{-0.00039}$	$y_{150}^{\text{SPT}}$	0.9873	$0.9917 \pm 0.0094$	$z_{\text{eq}}$	3315	$3312^{+60}_{-75}$
$c_{217}$	0.99719	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0194	$1.026^{+0.020}_{-0.026}$	$100\theta_{\text{eq}}$	0.8298	$0.831^{+0.015}_{-0.012}$
$\xi^{\text{tSZ-CIB}}$	0.002	$< 0.355$	$\Omega_\Lambda$	0.7065	$0.707^{+0.020}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07268	$0.0728^{+0.0012}_{-0.0010}$
$A^{\text{kSZ}}$	1.61	$4.40^{+2.6}_{-2.2}$	$\Omega_m$	0.2935	$0.293^{+0.015}_{-0.020}$			

Best-fit  $\chi_{\text{eff}}^2 = 10516.36$ ; R-1 = 0.14209

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.94 lensing: 9.68 lowl: -8.22 CamSpec: 7809.51 highL: 690.35



### 3.9 base\_Alens\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022398	$0.02239 \pm 0.00027$	$\beta_1^1$	0.31	$0.26 \pm 0.55$	$\sigma_8$	0.8250	$0.815 \pm 0.012$
$\Omega_c h^2$	0.11755	$0.1175 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.44	$10.63 \pm 0.59$	$z_{\text{re}}$	11.57	$10.5 \pm 1.1$
$100\theta_{\text{MC}}$	1.04171	$1.04170 \pm 0.00057$	$A_{218}^{\text{PS, ACT}}$	76.29	$77.0 \pm 4.6$	$H_0$	68.52	$68.52 \pm 0.84$
$\tau$	0.0971	$0.085 \pm 0.012$	$A_{95}^{\text{PS, SPT}}$	7.46	$7.89^{+1.4}_{-1.7}$	$10^9 A_s$	2.216	$2.164^{+0.051}_{-0.059}$
$A_L$	1.188	$1.210 \pm 0.098$	$A_{150}^{\text{PS, SPT}}$	10.00	$10.26 \pm 0.51$	$\Omega_m h^2$	0.14060	$0.1406 \pm 0.0017$
$n_s$	0.9654	$0.9644 \pm 0.0056$	$A_{220}^{\text{PS, SPT}}$	73.21	$74.6 \pm 4.6$	$\Omega_m h^3$	0.09633	$0.09630 \pm 0.00058$
$\ln(10^{10} A_s)$	3.0984	$3.074 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.810	$0.829 \pm 0.088$	$Y_p$	0.247852	$0.24785 \pm 0.00011$
$A_{100}^{\text{PS}}$	191	$202 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.562	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8250	$1.8245 \pm 0.0093$
$A_{143}^{\text{PS}}$	67.5	$68 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9077	$0.935 \pm 0.024$	Age/Gyr	13.7597	$13.761 \pm 0.040$
$A_{217}^{\text{PS}}$	56.3	$55 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.420	$0.43^{+0.19}_{-0.21}$	$z_*$	1089.770	$1089.78 \pm 0.42$
$A_{143}^{\text{CIB}}$	3.39	$3.27 \pm 0.84$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.84 \pm 0.20$	$r_*$	145.035	$145.05 \pm 0.42$
$A_{217}^{\text{CIB}}$	53.2	$50.5 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9936	$0.9940 \pm 0.0073$	$100\theta_*$	1.04184	$1.04183 \pm 0.00056$
$A_{143}^{\text{tSZ}}$	4.98	$2.67^{+1.3}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0052	$1.008 \pm 0.014$	$z_{\text{drag}}$	1059.89	$1059.88 \pm 0.57$
$r_{143 \times 217}^{\text{PS}}$	0.808	$0.813 \pm 0.075$	$y_{148}^{\text{ACTe}}$	0.9900	$0.9906 \pm 0.0072$	$r_{\text{drag}}$	147.702	$147.72 \pm 0.44$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.927$	$y_{217}^{\text{ACTe}}$	0.9633	$0.966 \pm 0.010$	$k_D$	0.14014	$0.14011 \pm 0.00054$
$\gamma^{\text{CIB}}$	0.671	$0.655 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9884	$0.989 \pm 0.020$	$100\theta_D$	0.161031	$0.16105 \pm 0.00033$
$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9895	$0.9921 \pm 0.0097$	$z_{\text{eq}}$	3344.2	$3343 \pm 40$
$c_{217}$	0.99734	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0202	$1.027 \pm 0.023$	$100\theta_{\text{eq}}$	0.8245	$0.8247 \pm 0.0078$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.344$	$\Omega_\Lambda$	0.7005	$0.700 \pm 0.011$	$r_{\text{drag}}/D_V(0.57)$	0.07231	$0.07232 \pm 0.00062$
$A^{\text{kSZ}}$	0.79	$4.57^{+2.6}_{-2.3}$	$\Omega_m$	0.2995	$0.300 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.20$ ; R-1 =0.00873

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.34 DR9: 0.91 6DF: 0.07 CMB - lowLike: 2014.57 lowl: -7.26 CamSpec: 7807.76 highL: 689.73

### 3.10 base\_Alens\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022700	$0.02270 \pm 0.00031$	$\beta_1^1$	0.22	$0.17 \pm 0.56$	$\sigma_8$	0.8153	$0.803 \pm 0.014$
$\Omega_c h^2$	0.11431	$0.1140 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.50	$10.68 \pm 0.59$	$z_{\text{re}}$	11.75	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04225	$1.04225 \pm 0.00064$	$A_{218}^{\text{PS, ACT}}$	76.46	$77.2^{+4.9}_{-4.4}$	$H_0$	70.13	$70.3 \pm 1.2$
$\tau$	0.1015	$0.089 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.58	$8.00^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.162^{+0.052}_{-0.059}$
$A_L$	1.258	$1.29 \pm 0.11$	$A_{150}^{\text{PS, SPT}}$	10.11	$10.36 \pm 0.52$	$\Omega_m h^2$	0.13766	$0.1374 \pm 0.0024$
$n_s$	0.9735	$0.9731 \pm 0.0073$	$A_{220}^{\text{PS, SPT}}$	73.42	$74.9 \pm 4.7$	$\Omega_m h^3$	0.09654	$0.09650 \pm 0.00060$
$\ln(10^{10} A_s)$	3.0998	$3.073 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.807	$0.828 \pm 0.089$	$Y_P$	0.247979	$0.24798 \pm 0.00013$
$A_{100}^{\text{PS}}$	186	$196 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.559	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8117	$1.810 \pm 0.012$
$A_{143}^{\text{PS}}$	64.4	$65 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9079	$0.935 \pm 0.024$	Age/Gyr	13.698	$13.696 \pm 0.052$
$A_{217}^{\text{PS}}$	52.8	$52 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.418	$0.43 \pm 0.19$	$z_*$	1089.11	$1089.09 \pm 0.53$
$A_{143}^{\text{CIB}}$	3.36	$3.29 \pm 0.85$	$A_{\text{dust}}^{\text{ACTe}}$	0.839	$0.84 \pm 0.20$	$r_*$	145.66	$145.73 \pm 0.57$
$A_{217}^{\text{CIB}}$	53.7	$50.9 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9951	$0.9956 \pm 0.0074$	$100\theta_*$	1.04235	$1.04235 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	4.94	$2.76^{+1.4}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0079	$1.010 \pm 0.013$	$z_{\text{drag}}$	1060.35	$1060.35 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.805	$0.807 \pm 0.080$	$y_{148}^{\text{ACTe}}$	0.9916	$0.9923 \pm 0.0072$	$r_{\text{drag}}$	148.24	$148.31 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.925$	$y_{217}^{\text{ACTe}}$	0.9660	$0.968 \pm 0.010$	$k_D$	0.13980	$0.13972 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.680	$0.662 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9915	$0.992 \pm 0.020$	$100\theta_D$	0.160814	$0.16083 \pm 0.00033$
$c_{100}$	1.000596	$1.00060 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9925	$0.9952 \pm 0.0099$	$z_{\text{eq}}$	3274	$3268 \pm 56$
$c_{217}$	0.99724	$0.9973 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0230	$1.030 \pm 0.023$	$100\theta_{\text{eq}}$	0.8390	$0.840 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.319$	$\Omega_\Lambda$	0.7201	$0.721^{+0.016}_{-0.014}$	$r_{\text{drag}}/D_V(0.57)$	0.07352	$0.07363 \pm 0.00095$
$A^{\text{kSZ}}$	0.76	$4.30 \pm 2.2$	$\Omega_m$	0.2799	$0.279^{+0.014}_{-0.016}$			

Best-fit  $\chi_{\text{eff}}^2 = 10507.99$ ; R-1 = 0.01429

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.66 lowl: -8.30 CamSpec: 7810.57 highL: 688.62 Hubble - HST: 2.38

### 3.11 base\_Alens\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022562	$0.02261 \pm 0.00032$	$\beta_1^1$	0.23	$0.19 \pm 0.56$	$\sigma_8$	0.8009	$0.806 \pm 0.014$
$\Omega_c h^2$	0.11554	$0.1149 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.48	$10.67 \pm 0.59$	$z_{\text{re}}$	9.81	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04201	$1.04210 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	76.72	$77.1^{+4.9}_{-4.4}$	$H_0$	69.48	$69.8 \pm 1.3$
$\tau$	0.0778	$0.088 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.68	$7.97^{+1.4}_{-1.7}$	$10^9 A_s$	2.123	$2.162^{+0.052}_{-0.059}$
$A_L$	1.277	$1.27 \pm 0.11$	$A_{150}^{\text{PS, SPT}}$	10.09	$10.33 \pm 0.52$	$\Omega_m h^2$	0.13875	$0.1381 \pm 0.0025$
$n_s$	0.9688	$0.9710 \pm 0.0076$	$A_{220}^{\text{PS, SPT}}$	73.74	$74.8 \pm 4.7$	$\Omega_m h^3$	0.09641	$0.09641 \pm 0.00060$
$\ln(10^{10} A_s)$	3.0554	$3.073 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.792	$0.828 \pm 0.089$	$Y_P$	0.247921	$0.24794 \pm 0.00013$
$A_{100}^{\text{PS}}$	192	$198 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.542	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8169	$1.813 \pm 0.012$
$A_{143}^{\text{PS}}$	67.3	$66 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9086	$0.935 \pm 0.024$	Age/Gyr	13.725	$13.713 \pm 0.055$
$A_{217}^{\text{PS}}$	55.6	$53 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.422	$0.43 \pm 0.19$	$z_*$	1089.39	$1089.27 \pm 0.57$
$A_{143}^{\text{CIB}}$	3.20	$3.29 \pm 0.85$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.84 \pm 0.20$	$r_*$	145.44	$145.58 \pm 0.59$
$A_{217}^{\text{CIB}}$	52.7	$50.8 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9938	$0.9952 \pm 0.0074$	$100\theta_*$	1.04212	$1.04221 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.62	$2.73^{+1.4}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0063	$1.010 \pm 0.013$	$z_{\text{drag}}$	1060.12	$1060.20 \pm 0.63$
$r_{143 \times 217}^{\text{PS}}$	0.804	$0.809 \pm 0.078$	$y_{148}^{\text{ACTe}}$	0.9903	$0.9918 \pm 0.0073$	$r_{\text{drag}}$	148.06	$148.19 \pm 0.57$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.925$	$y_{217}^{\text{ACTe}}$	0.9645	$0.968 \pm 0.010$	$k_D$	0.13989	$0.13978 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.667	$0.660 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9895	$0.991 \pm 0.020$	$100\theta_D$	0.160920	$0.16089 \pm 0.00034$
$c_{100}$	1.000602	$1.00060 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9905	$0.9943 \pm 0.0099$	$z_{\text{eq}}$	3300	$3285 \pm 60$
$c_{217}$	0.99722	$0.9973 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0212	$1.029 \pm 0.023$	$100\theta_{\text{eq}}$	0.8335	$0.837 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.327$	$\Omega_\Lambda$	0.7126	$0.716^{+0.017}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07304	$0.0733 \pm 0.0010$
$A^{\text{kSZ}}$	1.31	$4.38 \pm 2.2$	$\Omega_m$	0.2874	$0.284^{+0.015}_{-0.017}$			

Best-fit  $\chi_{\text{eff}}^2 = 10932.03$ ; R-1 =0.00990

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.85 lowl: -8.51 CamSpec: 7808.97 highL: 689.07 SN - SNLS: 427.58

### 3.12 base\_Alens\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022407	$0.02251 \pm 0.00032$	$\beta_1^1$	0.38	$0.23 \pm 0.56$	$\sigma_8$	0.8252	$0.810 \pm 0.014$
$\Omega_c h^2$	0.11751	$0.1161 \pm 0.0028$	$A_{148}^{\text{PS, ACT}}$	10.41	$10.65 \pm 0.59$	$z_{\text{re}}$	11.60	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04177	$1.04192 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	75.84	$77.0 \pm 4.6$	$H_0$	68.56	$69.2 \pm 1.3$
$\tau$	0.0975	$0.087 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.33	$7.94^{+1.4}_{-1.7}$	$10^9 A_s$	2.218	$2.163^{+0.051}_{-0.059}$
$A_L$	1.179	$1.24 \pm 0.11$	$A_{150}^{\text{PS, SPT}}$	9.97	$10.30 \pm 0.52$	$\Omega_m h^2$	0.14056	$0.1393 \pm 0.0026$
$n_s$	0.9653	$0.9679 \pm 0.0077$	$A_{220}^{\text{PS, SPT}}$	72.61	$74.7 \pm 4.6$	$\Omega_m h^3$	0.09637	$0.09636 \pm 0.00060$
$\ln(10^{10} A_s)$	3.0993	$3.074 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.813	$0.829 \pm 0.089$	$Y_P$	0.247855	$0.24790 \pm 0.00014$
$A_{100}^{\text{PS}}$	196	$200 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.573	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8253	$1.819 \pm 0.013$
$A_{143}^{\text{PS}}$	67.7	$67 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9094	$0.935 \pm 0.024$	Age/Gyr	13.757	$13.735 \pm 0.055$
$A_{217}^{\text{PS}}$	56.7	$54 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.436	$0.43 \pm 0.19$	$z_*$	1089.76	$1089.51 \pm 0.58$
$A_{143}^{\text{CIB}}$	3.40	$3.28 \pm 0.84$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.84 \pm 0.20$	$r_*$	145.04	$145.33 \pm 0.60$
$A_{217}^{\text{CIB}}$	53.5	$50.7 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9936	$0.9947 \pm 0.0074$	$100\theta_*$	1.04190	$1.04203 \pm 0.00065$
$A_{143}^{\text{tSZ}}$	5.11	$2.70^{+1.3}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0039	$1.009 \pm 0.014$	$z_{\text{drag}}$	1059.93	$1060.05 \pm 0.63$
$r_{143 \times 217}^{\text{PS}}$	0.811	$0.811 \pm 0.077$	$y_{148}^{\text{ACTe}}$	0.9900	$0.9913 \pm 0.0073$	$r_{\text{drag}}$	147.70	$147.97 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.926$	$y_{217}^{\text{ACTe}}$	0.9626	$0.967 \pm 0.010$	$k_D$	0.14015	$0.13994 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.679	$0.657 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9884	$0.990 \pm 0.020$	$100\theta_D$	0.161030	$0.16097 \pm 0.00035$
$c_{100}$	1.000599	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9889	$0.9933 \pm 0.0099$	$z_{\text{eq}}$	3343	$3312 \pm 61$
$c_{217}$	0.99735	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0179	$1.028 \pm 0.023$	$100\theta_{\text{eq}}$	0.8248	$0.831 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.336$	$\Omega_\Lambda$	0.7010	$0.709^{+0.018}_{-0.016}$	$r_{\text{drag}}/D_V(0.57)$	0.07234	$0.0728 \pm 0.0010$
$A^{\text{kSZ}}$	0.73	$4.47 \pm 2.2$	$\Omega_m$	0.2990	$0.291^{+0.016}_{-0.018}$			

Best-fit  $\chi_{\text{eff}}^2 = 10635.14$ ; R-1 =0.00707

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.59 lowl: -7.20 CamSpec: 7807.52 highL: 690.00 SN - Union2.1: 130.14

### 3.13 base\_Alens\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022451	$0.02240 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.000	$0.38^{+0.16}_{-0.31}$	$\Omega_m h^3$	0.09639	$0.09632 \pm 0.00062$
$\Omega_c h^2$	0.11735	$0.1175 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.544	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247874	$0.24785 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04171	$1.04173 \pm 0.00070$	$c_{100}$	1.000597	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8306	$1.828 \pm 0.014$
$\tau$	0.0724	$< 0.0693$	$c_{217}$	0.99624	$0.9963 \pm 0.0014$	Age/Gyr	13.754	$13.758 \pm 0.062$
$A_L$	1.256	$1.28^{+0.13}_{-0.15}$	$\xi^{\text{tSZ-CIB}}$	0.22	—	$z_*$	1089.69	$1089.77 \pm 0.67$
$n_s$	0.9697	$0.9666 \pm 0.0088$	$A^{\text{kSZ}}$	0.00	$< 5.37$	$r_*$	145.05	$145.06 \pm 0.64$
$\ln(10^{10} A_s)$	3.052	$3.019^{+0.039}_{-0.090}$	$\beta_1^1$	0.53	$0.44 \pm 0.56$	$100\theta_*$	1.04184	$1.04186 \pm 0.00068$
$A_{100}^{\text{PS}}$	144	$157 \pm 60$	$\Omega_\Lambda$	0.7019	$0.700^{+0.020}_{-0.018}$	$z_{\text{drag}}$	1060.01	$1059.90 \pm 0.69$
$A_{143}^{\text{PS}}$	57.3	$50 \pm 10$	$\Omega_m$	0.2981	$0.300 \pm 0.019$	$r_{\text{drag}}$	147.70	$147.72 \pm 0.61$
$A_{217}^{\text{PS}}$	122.0	$107^{+20}_{-10}$	$\sigma_8$	0.8065	$0.793^{+0.020}_{-0.034}$	$k_D$	0.14019	$0.14012 \pm 0.00062$
$A_{143}^{\text{CIB}}$	2.47	$< 9.43$	$z_{\text{re}}$	9.38	$7.53^{+1.9}_{-5.2}$	$100\theta_D$	0.160964	$0.16105 \pm 0.00038$
$A_{217}^{\text{CIB}}$	23.0	$27^{+6}_{-8}$	$H_0$	68.64	$68.6 \pm 1.5$	$z_{\text{eq}}$	3341	$3343 \pm 68$
$A^{\text{tSZ}}_{143}$	5.55	—	$10^9 A_s$	2.116	$2.051^{+0.075}_{-0.18}$	$100\theta_{\text{eq}}$	0.8253	$0.825 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.920	$> 0.856$	$\Omega_m h^2$	0.14045	$0.1405 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07238	$0.0724 \pm 0.0011$

Best-fit  $\chi^2_{\text{eff}} = 7786.09$ ; R-1 = 0.00712

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.65 CamSpec: 7794.14

### 3.14 base\_Alens\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022313	$0.02228^{+0.00030}_{-0.00036}$	$r_{143 \times 217}^{\text{CIB}}$	0.404	$0.45 \pm 0.23$	$\Omega_m h^3$	0.09608	$0.09605 \pm 0.00058$
$\Omega_c h^2$	0.11725	$0.1174 \pm 0.0029$	$\gamma^{\text{CIB}}$	0.527	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247815	$0.24780^{+0.00013}_{-0.00015}$
$100\theta_{\text{MC}}$	1.04162	$1.04165 \pm 0.00066$	$c_{100}$	1.000600	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8268	$1.826 \pm 0.014$
$\tau$	0.0682	$< 0.0668$	$c_{217}$	0.99621	$0.9963 \pm 0.0014$	Age/Gyr	13.770	$13.772 \pm 0.057$
$A_L$	1.088	$1.122 \pm 0.093$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.85	$1089.91 \pm 0.61$
$n_s$	0.9674	$0.9655 \pm 0.0084$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.18	$145.17^{+0.60}_{-0.68}$
$\ln(10^{10} A_s)$	3.042	$3.013^{+0.038}_{-0.086}$	$\beta_1^1$	0.51	$0.45 \pm 0.55$	$100\theta_*$	1.04176	$1.04178 \pm 0.00065$
$A_{100}^{\text{PS}}$	144	$167 \pm 60$	$\Omega_\Lambda$	0.7014	$0.700 \pm 0.018$	$z_{\text{drag}}$	1059.67	$1059.61 \pm 0.63$
$A_{143}^{\text{PS}}$	48.7	$51 \pm 10$	$\Omega_m$	0.2986	$0.300 \pm 0.018$	$r_{\text{drag}}$	147.88	$147.88 \pm 0.61$
$A_{217}^{\text{PS}}$	114.1	$103^{+20}_{-20}$	$\sigma_8$	0.8025	$0.791^{+0.019}_{-0.034}$	$k_D$	0.13989	$0.13986 \pm 0.00062$
$A_{143}^{\text{CIB}}$	5.30	$< 10.8$	$z_{\text{re}}$	9.02	$7.34^{+1.8}_{-5.1}$	$100\theta_D$	0.161144	$0.16120 \pm 0.00035$
$A_{217}^{\text{CIB}}$	27.8	$29^{+6}_{-9}$	$H_0$	68.53	$68.5 \pm 1.4$	$z_{\text{eq}}$	3335	$3338 \pm 65$
$A^{\text{tSZ}}_{143}$	8.06	—	$10^9 A_s$	2.094	$2.040^{+0.071}_{-0.18}$	$100\theta_{\text{eq}}$	0.8259	$0.826 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.842$	$\Omega_m h^2$	0.14020	$0.1403 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07237	$0.0723^{+0.0010}_{-0.0011}$

Best-fit  $\chi^2_{\text{eff}} = 7800.04$ ; R-1 = 0.04272

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.85 lowl: -8.56 CamSpec: 7798.00

### 3.15 base\_Alens\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022444	$0.02236 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.000	$< 0.484$	$\Omega_m h^3$	0.09645	$0.09630 \pm 0.00060$
$\Omega_c h^2$	0.11784	$0.1179 \pm 0.0018$	$\gamma^{\text{CIB}}$	0.546	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247871	$0.24783 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04169	$1.04167 \pm 0.00058$	$c_{100}$	1.000589	$1.00060 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8332	$1.8294 \pm 0.0095$
$\tau$	0.0536	$< 0.0666$	$c_{217}$	0.99626	$0.9963 \pm 0.0014$	Age/Gyr	13.7575	$13.767 \pm 0.042$
$A_L$	1.298	$1.27 \pm 0.13$	$\xi^{\text{tSZ-CIB}}$	0.22	—	$z_*$	1089.741	$1089.86 \pm 0.45$
$n_s$	0.9685	$0.9654 \pm 0.0062$	$A^{\text{kSZ}}$	0.00	$< 5.43$	$r_*$	144.924	$144.98 \pm 0.42$
$\ln(10^{10} A_s)$	3.016	$3.015^{+0.038}_{-0.087}$	$\beta_1^1$	0.55	$0.45 \pm 0.56$	$100\theta_*$	1.04180	$1.04180 \pm 0.00057$
$A_{100}^{\text{PS}}$	146	$158 \pm 60$	$\Omega_\Lambda$	0.6991	$0.698^{+0.012}_{-0.011}$	$z_{\text{drag}}$	1060.05	$1059.83 \pm 0.61$
$A_{143}^{\text{PS}}$	57.6	$51 \pm 10$	$\Omega_m$	0.3009	$0.302 \pm 0.011$	$r_{\text{drag}}$	147.571	$147.65 \pm 0.44$
$A_{217}^{\text{PS}}$	121.8	$107^{+20}_{-10}$	$\sigma_8$	0.7934	$0.793^{+0.017}_{-0.035}$	$k_D$	0.14031	$0.14016 \pm 0.00056$
$A_{143}^{\text{CIB}}$	2.55	$< 9.46$	$z_{\text{re}}$	7.58	$7.33^{+1.7}_{-5.2}$	$100\theta_D$	0.160953	$0.16107 \pm 0.00035$
$A_{217}^{\text{CIB}}$	23.1	$27^{+6}_{-8}$	$H_0$	68.44	$68.35 \pm 0.86$	$z_{\text{eq}}$	3352.2	$3352 \pm 41$
$A^{\text{tSZ}}_{143}$	5.41	—	$10^9 A_s$	2.041	$2.044^{+0.072}_{-0.18}$	$100\theta_{\text{eq}}$	0.8231	$0.8231 \pm 0.0078$
$r_{143 \times 217}^{\text{PS}}$	0.918	$> 0.856$	$\Omega_m h^2$	0.14093	$0.1409 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07221	$0.07219 \pm 0.00063$

Best-fit  $\chi^2_{\text{eff}} = 7787.11$ ; R-1 = 0.00960

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.45 6DF: 0.07 DR9: 0.77 CMB - lowl: -8.90 CamSpec: 7794.14

### 3.16 base\_Alens\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022783	$0.02269 \pm 0.00034$	$r_{143 \times 217}^{\text{CIB}}$	0.475	$0.36^{+0.13}_{-0.33}$	$\Omega_m h^3$	0.09666	$0.09655 \pm 0.00062$
$\Omega_c h^2$	0.11411	$0.1146 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.521	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.248014	$0.24797 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04224	$1.04220 \pm 0.00066$	$c_{100}$	1.000602	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8168	$1.816 \pm 0.012$
$\tau$	0.0988	$< 0.0821$	$c_{217}$	0.99625	$0.9962 \pm 0.0014$	Age/Gyr	13.689	$13.701 \pm 0.056$
$A_L$	1.287	$1.34^{+0.14}_{-0.17}$	$\xi^{\text{tSZ-CIB}}$	0.32	—	$z_*$	1089.00	$1089.16 \pm 0.58$
$n_s$	0.9789	$0.9742 \pm 0.0082$	$A^{\text{kSZ}}$	0.00	$< 5.02$	$r_*$	145.65	$145.60 \pm 0.58$
$\ln(10^{10} A_s)$	3.097	$3.031^{+0.049}_{-0.10}$	$\beta_1^1$	0.45	$0.36 \pm 0.56$	$100\theta_*$	1.04234	$1.04231 \pm 0.00065$
$A_{100}^{\text{PS}}$	124	$152 \pm 60$	$\Omega_\Lambda$	0.7215	$0.718 \pm 0.015$	$z_{\text{drag}}$	1060.54	$1060.35 \pm 0.67$
$A_{143}^{\text{PS}}$	54.3	$48 \pm 10$	$\Omega_m$	0.2785	$0.282 \pm 0.015$	$r_{\text{drag}}$	148.20	$148.18 \pm 0.57$
$A_{217}^{\text{PS}}$	119.3	$106^{+20}_{-10}$	$\sigma_8$	0.8148	$0.789^{+0.023}_{-0.038}$	$k_D$	0.13990	$0.13985 \pm 0.00061$
$A_{143}^{\text{CIB}}$	0.00	$< 9.04$	$z_{\text{re}}$	11.50	$8.28^{+3.0}_{-5.0}$	$100\theta_D$	0.160710	$0.16082 \pm 0.00036$
$A_{217}^{\text{CIB}}$	22.3	$26^{+6}_{-8}$	$H_0$	70.28	$70.0 \pm 1.3$	$z_{\text{eq}}$	3271	$3280 \pm 59$
$A^{\text{tSZ}}_{143}$	6.52	—	$10^9 A_s$	2.214	$2.077^{+0.092}_{-0.22}$	$100\theta_{\text{eq}}$	0.8398	$0.838 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.933	$> 0.856$	$\Omega_m h^2$	0.13754	$0.1379 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07360	$0.07344 \pm 0.00099$

Best-fit  $\chi^2_{\text{eff}} = 7789.49$ ; R-1 = 0.01180

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.82 CamSpec: 7795.30 Hubble - HST: 2.21



### 3.17 base\_Alens\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022657	$0.02258 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.319	$0.37^{+0.15}_{-0.32}$	$\Omega_m h^3$	0.09658	$0.09643 \pm 0.00062$
$\Omega_c h^2$	0.11544	$0.1156 \pm 0.0028$	$\gamma^{\text{CIB}}$	0.519	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247962	$0.24793 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04205	$1.04202 \pm 0.00068$	$c_{100}$	1.000608	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8223	$1.820 \pm 0.013$
$\tau$	0.0680	$< 0.0774$	$c_{217}$	0.99623	$0.9963 \pm 0.0014$	Age/Gyr	13.714	$13.723 \pm 0.059$
$A_L$	1.318	$1.32^{+0.14}_{-0.16}$	$\xi^{\text{tSZ-CIB}}$	0.15	—	$z_*$	1089.27	$1089.38 \pm 0.62$
$n_s$	0.9745	$0.9715 \pm 0.0085$	$A^{\text{kSZ}}$	0.00	$< 5.17$	$r_*$	145.39	$145.43 \pm 0.60$
$\ln(10^{10} A_s)$	3.039	$3.026^{+0.045}_{-0.099}$	$\beta_1^1$	0.52	$0.38 \pm 0.56$	$100\theta_*$	1.04215	$1.04213 \pm 0.00066$
$A_{100}^{\text{PS}}$	108	$154 \pm 60$	$\Omega_\Lambda$	0.7137	$0.712 \pm 0.017$	$z_{\text{drag}}$	1060.35	$1060.16 \pm 0.68$
$A_{143}^{\text{PS}}$	50.5	$49 \pm 10$	$\Omega_m$	0.2863	$0.288 \pm 0.017$	$r_{\text{drag}}$	147.98	$148.05 \pm 0.58$
$A_{217}^{\text{PS}}$	121.4	$107^{+20}_{-10}$	$\sigma_8$	0.7953	$0.790^{+0.022}_{-0.037}$	$k_D$	0.14004	$0.13991 \pm 0.00061$
$A_{143}^{\text{CIB}}$	0.04	$< 9.19$	$z_{\text{re}}$	8.89	$8.01^{+2.6}_{-5.2}$	$100\theta_D$	0.160801	$0.16091 \pm 0.00037$
$A_{217}^{\text{CIB}}$	22.2	$27^{+6}_{-8}$	$H_0$	69.61	$69.5 \pm 1.4$	$z_{\text{eq}}$	3300	$3301 \pm 62$
$A^{\text{tSZ}}_{143}$	8.69	—	$10^9 A_s$	2.088	$2.067^{+0.085}_{-0.20}$	$100\theta_{\text{eq}}$	0.8338	$0.834 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.939	$> 0.856$	$\Omega_m h^2$	0.13875	$0.1388 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07310	$0.0731 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 8213.92$ ; R-1 = 0.00773

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.06 CamSpec: 7794.65 SN - SNLS: 427.50

### 3.18 base\_Alens\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022514	$0.02245 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.477	$0.37^{+0.16}_{-0.31}$	$\Omega_m h^3$	0.09647	$0.09635 \pm 0.00062$
$\Omega_c h^2$	0.11689	$0.1170 \pm 0.0029$	$\gamma^{\text{CIB}}$	0.547	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247901	$0.24787 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04181	$1.04181 \pm 0.00068$	$c_{100}$	1.000603	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8280	$1.825 \pm 0.013$
$\tau$	0.0559	$< 0.0713$	$c_{217}$	0.99621	$0.9963 \pm 0.0014$	Age/Gyr	13.742	$13.749 \pm 0.059$
$A_L$	1.306	$1.29^{+0.13}_{-0.16}$	$\xi^{\text{tSZ-CIB}}$	0.03	—	$z_*$	1089.57	$1089.67 \pm 0.63$
$n_s$	0.9701	$0.9679 \pm 0.0085$	$A^{\text{kSZ}}$	1.20	$< 5.33$	$r_*$	145.12	$145.16 \pm 0.61$
$\ln(10^{10} A_s)$	3.018	$3.020^{+0.041}_{-0.092}$	$\beta_1^1$	0.55	$0.42 \pm 0.56$	$100\theta_*$	1.04193	$1.04193 \pm 0.00066$
$A_{100}^{\text{PS}}$	105	$157 \pm 60$	$\Omega_\Lambda$	0.7048	$0.704^{+0.019}_{-0.017}$	$z_{\text{drag}}$	1060.12	$1059.97 \pm 0.68$
$A_{143}^{\text{PS}}$	48.8	$50 \pm 10$	$\Omega_m$	0.2952	$0.296^{+0.017}_{-0.019}$	$r_{\text{drag}}$	147.75	$147.81 \pm 0.59$
$A_{217}^{\text{PS}}$	119.0	$107^{+20}_{-10}$	$\sigma_8$	0.7911	$0.792^{+0.020}_{-0.035}$	$k_D$	0.14018	$0.14006 \pm 0.00061$
$A_{143}^{\text{CIB}}$	0.00	$< 9.38$	$z_{\text{re}}$	7.78	$7.63^{+2.0}_{-5.3}$	$100\theta_D$	0.160910	$0.16101 \pm 0.00038$
$A_{217}^{\text{CIB}}$	23.2	$27^{+6}_{-8}$	$H_0$	68.88	$68.8 \pm 1.4$	$z_{\text{eq}}$	3331	$3331 \pm 63$
$A^{\text{tSZ}}_{143}$	9.11	—	$10^9 A_s$	2.044	$2.054^{+0.077}_{-0.19}$	$100\theta_{\text{eq}}$	0.8273	$0.827 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.934	$> 0.856$	$\Omega_m h^2$	0.14005	$0.1401 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07255	$0.0725 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 7916.27$ ; R-1 = 0.00761

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.99 CamSpec: 7794.62 SN - Union2.1: 130.06

### 3.19 base\_Alens\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02260	$0.02259 \pm 0.00053$	$\sigma_8$	0.8144	$0.806 \pm 0.023$	$r_*$	145.74	$146.0 \pm 1.1$
$\Omega_c h^2$	0.11430	$0.1135 \pm 0.0045$	$z_{\text{re}}$	10.84	$10.6 \pm 1.1$	$100\theta_*$	1.04049	$1.0402 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04039	$1.0400 \pm 0.0023$	$H_0$	69.42	$69.7 \pm 2.2$	$z_{\text{drag}}$	1060.12	$1060.0 \pm 1.2$
$\tau$	0.0902	$0.088^{+0.013}_{-0.015}$	$10^9 A_s$	2.219	$2.198^{+0.060}_{-0.071}$	$r_{\text{drag}}$	148.36	$148.6 \pm 1.2$
$A_L$	0.89	$< 1.03$	$\Omega_m h^2$	0.13754	$0.1367 \pm 0.0044$	$k_D$	0.13960	$0.1393 \pm 0.0014$
$n_s$	0.9744	$0.973 \pm 0.013$	$\Omega_m h^3$	0.09549	$0.0952 \pm 0.0018$	$100\theta_D$	0.16066	$0.16067 \pm 0.00053$
$\ln(10^{10} A_s)$	3.0996	$3.090 \pm 0.030$	$Y_P$	0.247937	$0.24793 \pm 0.00023$	$z_{\text{eq}}$	3271	$3251 \pm 100$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8527	$1.841 \pm 0.030$	$100\theta_{\text{eq}}$	0.8377	$0.842^{+0.020}_{-0.023}$
$\Omega_\Lambda$	0.7146	$0.717^{+0.029}_{-0.024}$	Age/Gyr	13.764	$13.77 \pm 0.12$	$r_{\text{drag}}/D_V(0.57)$	0.07305	$0.0733 \pm 0.0017$
$\Omega_m$	0.2854	$0.283^{+0.024}_{-0.029}$	$z_*$	1089.24	$1089.18 \pm 0.87$			

Best-fit  $\chi^2_{\text{eff}} = 7557.63$ ; R-1 = 0.00697  
 $\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.64

### 3.20 base\_Alens\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022491	$0.02242 \pm 0.00046$	$\sigma_8$	0.8196	$0.814 \pm 0.018$	$r_*$	145.36	$145.48 \pm 0.81$
$\Omega_c h^2$	0.11606	$0.1158 \pm 0.0024$	$z_{\text{re}}$	10.84	$10.5 \pm 1.1$	$100\theta_*$	1.03971	$1.0395 \pm 0.0020$
$100\theta_{\text{MC}}$	1.03960	$1.0394 \pm 0.0021$	$H_0$	68.42	$68.40 \pm 0.98$	$z_{\text{drag}}$	1060.01	$1059.8 \pm 1.1$
$\tau$	0.0894	$0.086^{+0.012}_{-0.014}$	$10^9 A_s$	2.222	$2.201^{+0.056}_{-0.071}$	$r_{\text{drag}}$	148.00	$148.15 \pm 0.93$
$A_L$	0.807	$< 0.983$	$\Omega_m h^2$	0.13920	$0.1389 \pm 0.0026$	$k_D$	0.13990	$0.1397 \pm 0.0012$
$n_s$	0.9694	$0.968 \pm 0.011$	$\Omega_m h^3$	0.09524	$0.0950 \pm 0.0018$	$100\theta_D$	0.16062	$0.16071 \pm 0.00053$
$\ln(10^{10} A_s)$	3.1009	$3.091^{+0.027}_{-0.031}$	$Y_P$	0.247891	$0.24786 \pm 0.00020$	$z_{\text{eq}}$	3311	$3303 \pm 62$
$A_{\text{tSZ}}$	0.75	—	$10^9 A_s e^{-2\tau}$	1.8581	$1.854 \pm 0.023$	$100\theta_{\text{eq}}$	0.8293	$0.831 \pm 0.010$
$\Omega_\Lambda$	0.7027	$0.703 \pm 0.012$	Age/Gyr	13.807	$13.819 \pm 0.092$	$r_{\text{drag}}/D_V(0.57)$	0.07227	$0.07230 \pm 0.00070$
$\Omega_m$	0.2973	$0.297 \pm 0.012$	$z_*$	1089.52	$1089.60 \pm 0.57$			

Best-fit  $\chi^2_{\text{eff}} = 7559.14$ ; R-1 = 0.01412

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.06 DR7: 0.35 DR9: 0.85 CMB - WMAP: 7557.88

### 3.21 base\_Alens\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022883	$0.02291 \pm 0.00049$	$\sigma_8$	0.7991	$0.795 \pm 0.022$	$r_*$	146.62	$146.7 \pm 1.0$
$\Omega_c h^2$	0.11022	$0.1101 \pm 0.0036$	$z_{\text{re}}$	11.23	$10.8 \pm 1.1$	$100\theta_*$	1.04097	$1.0413 \pm 0.0021$
$100\theta_{\text{MC}}$	1.04088	$1.0412 \pm 0.0021$	$H_0$	71.38	$71.6 \pm 1.7$	$z_{\text{drag}}$	1060.47	$1060.5 \pm 1.1$
$\tau$	0.0971	$0.092^{+0.013}_{-0.016}$	$10^9 A_s$	2.217	$2.196^{+0.063}_{-0.077}$	$r_{\text{drag}}$	149.16	$149.2 \pm 1.1$
$A_L$	0.82	$< 1.14$	$\Omega_m h^2$	0.13375	$0.1336 \pm 0.0036$	$k_D$	0.13896	$0.1389 \pm 0.0013$
$n_s$	0.9809	$0.982 \pm 0.012$	$\Omega_m h^3$	0.09547	$0.0956 \pm 0.0018$	$100\theta_D$	0.16051	$0.16055 \pm 0.00052$
$\ln(10^{10} A_s)$	3.0985	$3.089^{+0.030}_{-0.034}$	$Y_P$	0.248056	$0.24806 \pm 0.00020$	$z_{\text{eq}}$	3180	$3177 \pm 86$
$A_{\text{tSZ}}$	1.31	—	$10^9 A_s e^{-2\tau}$	1.8254	$1.825 \pm 0.027$	$100\theta_{\text{eq}}$	0.8569	$0.858 \pm 0.017$
$\Omega_\Lambda$	0.7375	$0.739^{+0.020}_{-0.017}$	Age/Gyr	13.698	$13.685 \pm 0.099$	$r_{\text{drag}}/D_V(0.57)$	0.07459	$0.0748 \pm 0.0013$
$\Omega_m$	0.2625	$0.261^{+0.017}_{-0.020}$	$z_*$	1088.54	$1088.50 \pm 0.68$			

Best-fit  $\chi^2_{\text{eff}} = 7559.68$ ; R-1 = 0.01806

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.60 Hubble - HST: 1.08

### 3.22 base\_Alens\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02277	$0.02277 \pm 0.00052$	$\sigma_8$	0.8044	$0.796 \pm 0.022$	$r_*$	146.41	$146.5 \pm 1.0$
$\Omega_c h^2$	0.11131	$0.1108 \pm 0.0039$	$z_{\text{re}}$	11.22	$10.7 \pm 1.1$	$100\theta_*$	1.04067	$1.0407 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04056	$1.0406 \pm 0.0022$	$H_0$	70.75	$71.0 \pm 1.9$	$z_{\text{drag}}$	1060.31	$1060.3 \pm 1.2$
$\tau$	0.0963	$0.091^{+0.013}_{-0.016}$	$10^9 A_s$	2.223	$2.193^{+0.061}_{-0.075}$	$r_{\text{drag}}$	148.98	$149.1 \pm 1.1$
$A_L$	0.87	$< 1.09$	$\Omega_m h^2$	0.13472	$0.1343 \pm 0.0038$	$k_D$	0.13907	$0.1389 \pm 0.0013$
$n_s$	0.9791	$0.978 \pm 0.013$	$\Omega_m h^3$	0.09532	$0.0953 \pm 0.0018$	$100\theta_D$	0.16057	$0.16062 \pm 0.00053$
$\ln(10^{10} A_s)$	3.1014	$3.087^{+0.029}_{-0.033}$	$Y_P$	0.248008	$0.24801 \pm 0.00022$	$z_{\text{eq}}$	3204	$3192 \pm 90$
$A_{\text{tSZ}}$	0.69	—	$10^9 A_s e^{-2\tau}$	1.8335	$1.827 \pm 0.027$	$100\theta_{\text{eq}}$	0.8516	$0.854 \pm 0.018$
$\Omega_\Lambda$	0.7309	$0.733^{+0.023}_{-0.019}$	Age/Gyr	13.725	$13.72 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07412	$0.0743 \pm 0.0015$
$\Omega_m$	0.2691	$0.267^{+0.019}_{-0.023}$	$z_*$	1088.77	$1088.74 \pm 0.77$			

Best-fit  $\chi^2_{\text{eff}} = 7984.74$ ; R-1 = 0.01414

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.28 SN - SNLS: 426.47

### 3.23 base\_Alens\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02261	$0.02262 \pm 0.00052$	$\sigma_8$	0.8135	$0.805 \pm 0.022$	$r_*$	145.83	$146.1 \pm 1.1$
$\Omega_c h^2$	0.11395	$0.1131 \pm 0.0040$	$z_{\text{re}}$	10.93	$10.6 \pm 1.1$	$100\theta_*$	1.04045	$1.0402 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04034	$1.0401 \pm 0.0022$	$H_0$	69.55	$69.8 \pm 2.0$	$z_{\text{drag}}$	1060.12	$1060.1 \pm 1.2$
$\tau$	0.0914	$0.089^{+0.012}_{-0.015}$	$10^9 A_s$	2.221	$2.197^{+0.060}_{-0.072}$	$r_{\text{drag}}$	148.44	$148.7 \pm 1.1$
$A_L$	0.82	$< 1.04$	$\Omega_m h^2$	0.13720	$0.1364 \pm 0.0039$	$k_D$	0.13952	$0.1393 \pm 0.0013$
$n_s$	0.9748	$0.974 \pm 0.013$	$\Omega_m h^3$	0.09542	$0.0952 \pm 0.0018$	$100\theta_D$	0.16065	$0.16066 \pm 0.00053$
$\ln(10^{10} A_s)$	3.1006	$3.089^{+0.028}_{-0.032}$	$Y_P$	0.247941	$0.24794 \pm 0.00022$	$z_{\text{eq}}$	3263	$3243 \pm 94$
$A_{\text{tSZ}}$	0.13	—	$10^9 A_s e^{-2\tau}$	1.8502	$1.840 \pm 0.028$	$100\theta_{\text{eq}}$	0.8393	$0.844 \pm 0.019$
$\Omega_\Lambda$	0.7164	$0.719^{+0.025}_{-0.022}$	Age/Gyr	13.762	$13.76 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07315	$0.0734 \pm 0.0015$
$\Omega_m$	0.2836	$0.281^{+0.022}_{-0.025}$	$z_*$	1089.19	$1089.12 \pm 0.80$			

Best-fit  $\chi^2_{\text{eff}} = 7687.52$ ; R-1 = 0.00800

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.61 SN - Union2.1: 129.91

### 3.24 base\_Alens\_planck\_tauprior

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022287	$0.02224 \pm 0.00040$	$r_{143 \times 217}^{\text{CIB}}$	0.608	$0.40^{+0.21}_{-0.28}$	$\Omega_m h^3$	0.09634	$0.09621 \pm 0.00064$
$\Omega_c h^2$	0.11930	$0.1193 \pm 0.0037$	$\gamma^{\text{CIB}}$	0.587	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247804	$0.24778 \pm 0.00017$
$100\theta_{\text{MC}}$	1.04151	$1.04148 \pm 0.00074$	$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8396	$1.835 \pm 0.017$
$\tau$	0.0928	$0.089 \pm 0.013$	$c_{217}$	0.99634	$0.9963 \pm 0.0014$	Age/Gyr	13.785	$13.790 \pm 0.070$
$A_L$	1.151	$1.15^{+0.12}_{-0.14}$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.07	$1090.14 \pm 0.78$
$n_s$	0.9641	$0.961 \pm 0.011$	$A^{\text{kSZ}}$	0.00	$< 5.80$	$r_*$	144.66	$144.72 \pm 0.74$
$\ln(10^{10} A_s)$	3.0977	$3.088 \pm 0.027$	$\beta_1^1$	0.67	$0.48 \pm 0.58$	$100\theta_*$	1.04164	$1.04162 \pm 0.00072$
$A_{100}^{\text{PS}}$	153	$164 \pm 60$	$\Omega_\Lambda$	0.6900	$0.689^{+0.026}_{-0.021}$	$z_{\text{drag}}$	1059.78	$1059.64 \pm 0.74$
$A_{143}^{\text{PS}}$	63.7	$52 \pm 10$	$\Omega_m$	0.3100	$0.311^{+0.021}_{-0.026}$	$r_{\text{drag}}$	147.36	$147.44 \pm 0.70$
$A_{217}^{\text{PS}}$	116.7	$107^{+20}_{-10}$	$\sigma_8$	0.8308	$0.826 \pm 0.017$	$k_D$	0.14042	$0.14029 \pm 0.00066$
$A_{143}^{\text{CIB}}$	0.0	$< 9.97$	$z_{\text{re}}$	11.29	$11.0 \pm 1.1$	$100\theta_D$	0.161095	$0.16118 \pm 0.00041$
$A_{217}^{\text{CIB}}$	26.3	$28^{+6}_{-9}$	$H_0$	67.73	$67.7 \pm 1.7$	$z_{\text{eq}}$	3383	$3381 \pm 80$
$A^{\text{tSZ}}_{143}$	5.87	—	$10^9 A_s$	2.215	$2.195 \pm 0.059$	$100\theta_{\text{eq}}$	0.8169	$0.818 \pm 0.016$
$r_{143 \times 217}^{\text{PS}}$	0.923	$> 0.851$	$\Omega_m h^2$	0.14224	$0.1421 \pm 0.0034$	$r_{\text{drag}}/D_V(0.57)$	0.07170	$0.0717 \pm 0.0013$

Best-fit  $\chi^2_{\text{eff}} = 7795.09$ ; R-1 = 0.00613

$\chi^2_{\text{eff}}$ : CMB - CamSpec: 7794.73



### 3.25 base\_Alens\_planck\_tauprior\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022206	$0.02215^{+0.00035}_{-0.00039}$	$r_{143 \times 217}^{\text{CIB}}$	0.530	$0.45 \pm 0.23$	$\Omega_m h^3$	0.09600	$0.09596 \pm 0.00060$
$\Omega_c h^2$	0.11837	$0.1189 \pm 0.0035$	$\gamma^{\text{CIB}}$	0.516	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247770	$0.24775 \pm 0.00016$
$100\theta_{\text{MC}}$	1.04146	$1.04140 \pm 0.00071$	$c_{100}$	1.000599	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8301	$1.833 \pm 0.016$
$\tau$	0.0864	$0.089 \pm 0.013$	$c_{217}$	0.99625	$0.9963 \pm 0.0014$	Age/Gyr	13.790	$13.799^{+0.070}_{-0.063}$
$A_L$	1.028	$1.017^{+0.075}_{-0.084}$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.617$	$z_*$	1090.09	$1090.21 \pm 0.73$
$n_s$	0.9624	$0.961 \pm 0.010$	$A^{\text{kSZ}}$	1.52	—	$r_*$	144.97	$144.87 \pm 0.73$
$\ln(10^{10} A_s)$	3.0797	$3.086 \pm 0.027$	$\beta_1^1$	0.53	$0.48 \pm 0.57$	$100\theta_*$	1.04160	$1.04154 \pm 0.00069$
$A_{100}^{\text{PS}}$	139	$171 \pm 60$	$\Omega_\Lambda$	0.6944	$0.690 \pm 0.022$	$z_{\text{drag}}$	1059.51	$1059.43^{+0.64}_{-0.73}$
$A_{143}^{\text{PS}}$	42.5	$52 \pm 10$	$\Omega_m$	0.3056	$0.310 \pm 0.022$	$r_{\text{drag}}$	147.70	$147.62 \pm 0.69$
$A_{217}^{\text{PS}}$	108.4	$103^{+20}_{-20}$	$\sigma_8$	0.8207	$0.824 \pm 0.017$	$k_D$	0.14000	$0.14004 \pm 0.00065$
$A_{143}^{\text{CIB}}$	6.60	$< 11.0$	$z_{\text{re}}$	10.73	$11.0 \pm 1.2$	$100\theta_D$	0.161231	$0.16129 \pm 0.00038$
$A_{217}^{\text{CIB}}$	29.8	$30^{+6}_{-9}$	$H_0$	67.98	$67.7 \pm 1.6$	$z_{\text{eq}}$	3359	$3371 \pm 78$
$A^{\text{tSZ}}_{143}$	9.45	—	$10^9 A_s$	2.175	$2.190 \pm 0.059$	$100\theta_{\text{eq}}$	0.8210	$0.819 \pm 0.015$
$r_{143 \times 217}^{\text{PS}}$	0.890	$> 0.842$	$\Omega_m h^2$	0.14122	$0.1417 \pm 0.0033$	$r_{\text{drag}}/D_V(0.57)$	0.07196	$0.0718 \pm 0.0012$

Best-fit  $\chi^2_{\text{eff}} = 7808.51$ ; R-1 = 0.03299

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.86 CamSpec: 7797.72

### 3.26 base\_Alens\_planck\_tauprior\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022190	$0.02228 \pm 0.00035$	$\beta_1^1$	0.42	$0.31 \pm 0.57$	$\sigma_8$	0.8328	$0.823 \pm 0.017$
$\Omega_c h^2$	0.12011	$0.1189 \pm 0.0034$	$A_{148}^{\text{PS, ACT}}$	10.35	$10.62 \pm 0.59$	$z_{\text{re}}$	11.52	$10.9 \pm 1.1$
$100\theta_{\text{MC}}$	1.04137	$1.04153 \pm 0.00070$	$A_{218}^{\text{PS, ACT}}$	75.95	$76.9 \pm 4.5$	$H_0$	67.33	$67.9 \pm 1.6$
$\tau$	0.0949	$0.089 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.38	$7.85^{+1.4}_{-1.7}$	$10^9 A_s$	2.221	$2.189 \pm 0.058$
$A_L$	1.131	$1.17^{+0.11}_{-0.13}$	$A_{150}^{\text{PS, SPT}}$	9.88	$10.21 \pm 0.52$	$\Omega_m h^2$	0.14294	$0.1418 \pm 0.0031$
$n_s$	0.9569	$0.9596 \pm 0.0094$	$A_{220}^{\text{PS, SPT}}$	72.71	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09624	$0.09625 \pm 0.00060$
$\ln(10^{10} A_s)$	3.1007	$3.086 \pm 0.027$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.831 \pm 0.088$	$Y_P$	0.247762	$0.24780 \pm 0.00015$
$A_{100}^{\text{PS}}$	203	$208 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.558	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8373	$1.831 \pm 0.016$
$A_{143}^{\text{PS}}$	71.5	$71 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9097	$0.935 \pm 0.024$	Age/Gyr	13.802	$13.782 \pm 0.062$
$A_{217}^{\text{PS}}$	59.5	$57 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.26	$1090.04 \pm 0.69$
$A_{143}^{\text{CIB}}$	3.28	$3.26 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.851	$0.84 \pm 0.20$	$r_*$	144.53	$144.79 \pm 0.71$
$A_{217}^{\text{CIB}}$	52.8	$50.2 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9931 \pm 0.0074$	$100\theta_*$	1.04152	$1.04167 \pm 0.00069$
$A_{143}^{\text{tSZ}}$	4.79	$2.56^{+1.2}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0031	$1.007 \pm 0.014$	$z_{\text{drag}}$	1059.59	$1059.73 \pm 0.66$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.818 \pm 0.073$	$y_{148}^{\text{ACTe}}$	0.9883	$0.9896 \pm 0.0073$	$r_{\text{drag}}$	147.26	$147.49 \pm 0.68$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.926$	$y_{217}^{\text{ACTe}}$	0.9619	$0.965 \pm 0.010$	$k_D$	0.14045	$0.14027 \pm 0.00066$
$\gamma^{\text{CIB}}$	0.667	$0.648 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9850	$0.987 \pm 0.020$	$100\theta_D$	0.161187	$0.16113 \pm 0.00037$
$c_{100}$	1.000605	$1.00060 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9859	$0.990 \pm 0.010$	$z_{\text{eq}}$	3400	$3373 \pm 75$
$c_{217}$	0.99730	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0173	$1.026^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8135	$0.819 \pm 0.015$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.377$	$\Omega_\Lambda$	0.6847	$0.692^{+0.023}_{-0.020}$	$r_{\text{drag}}/D_V(0.57)$	0.07141	$0.0719 \pm 0.0012$
$A^{\text{kSZ}}$	1.24	$4.81^{+2.7}_{-2.1}$	$\Omega_m$	0.3153	$0.308^{+0.020}_{-0.023}$			

Best-fit  $\chi_{\text{eff}}^2 = 8497.52$ ; R-1 = 0.00598

$\chi_{\text{eff}}^2$ : CMB - CamSpec: 7806.70 highL: 690.57

### 3.27 base\_Alens\_planck\_tauprior\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022149	$0.02221 \pm 0.00032$	$\beta_1^1$	0.45	$0.34 \pm 0.55$	$\sigma_8$	0.8312	$0.822^{+0.017}_{-0.015}$
$\Omega_c h^2$	0.11937	$0.1183 \pm 0.0032$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.66 \pm 0.58$	$z_{\text{re}}$	11.57	$11.0^{+1.3}_{-1.0}$
$100\theta_{\text{MC}}$	1.04135	$1.04148 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	76.07	$76.9 \pm 4.4$	$H_0$	67.55	$68.0 \pm 1.5$
$\tau$	0.0955	$0.090 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.49	$7.86^{+1.4}_{-1.7}$	$10^9 A_s$	2.220	$2.191^{+0.065}_{-0.055}$
$A_L$	1.002	$1.035^{+0.062}_{-0.084}$	$A_{150}^{\text{PS, SPT}}$	9.952	$10.26^{+0.53}_{-0.47}$	$\Omega_m h^2$	0.14216	$0.1412 \pm 0.0030$
$n_s$	0.9582	$0.9603 \pm 0.0089$	$A_{220}^{\text{PS, SPT}}$	73.12	$74.7 \pm 4.3$	$\Omega_m h^3$	0.09602	$0.09600^{+0.00050}_{-0.00062}$
$\ln(10^{10} A_s)$	3.0999	$3.087^{+0.030}_{-0.024}$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.831 \pm 0.089$	$Y_P$	0.247745	$0.24777 \pm 0.00014$
$A_{100}^{\text{PS}}$	213	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.544	$0.58 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8335	$1.828 \pm 0.015$
$A_{143}^{\text{PS}}$	74.5	$73^{+8}_{-9}$	$r_{150 \times 220}^{\text{PS}}$	0.9084	$0.935^{+0.021}_{-0.026}$	Age/Gyr	13.804	$13.789 \pm 0.057$
$A_{217}^{\text{PS}}$	61.1	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.436	$0.43 \pm 0.19$	$z_*$	1090.25	$1090.09 \pm 0.63$
$A_{143}^{\text{CIB}}$	3.20	$3.24 \pm 0.85$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.19$	$r_*$	144.75	$144.98 \pm 0.70$
$A_{217}^{\text{CIB}}$	52.42	$49.9 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9920^{+0.0070}_{-0.0081}$	$100\theta_*$	1.04150	$1.04162 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.58	$2.51^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0023	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.44	$1059.51 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.826^{+0.072}_{-0.081}$	$y_{148}^{\text{ACTe}}$	0.9872	$0.9888 \pm 0.0073$	$r_{\text{drag}}$	147.50	$147.71 \pm 0.67$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9607	$0.964 \pm 0.010$	$k_D$	0.14017	$0.13998 \pm 0.00065$
$\gamma^{\text{CIB}}$	0.658	$0.642 \pm 0.079$	$y_{95}^{\text{SPT}}$	0.9832	$0.985 \pm 0.020$	$100\theta_D$	0.161264	$0.16125 \pm 0.00034$
$c_{100}$	1.000589	$1.00060 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9846	$0.9889 \pm 0.0097$	$z_{\text{eq}}$	3382	$3358 \pm 72$
$c_{217}$	0.99724	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0173	$1.026 \pm 0.024$	$100\theta_{\text{eq}}$	0.8167	$0.821 \pm 0.014$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.400$	$\Omega_\Lambda$	0.6884	$0.694^{+0.021}_{-0.018}$	$r_{\text{drag}}/D_V(0.57)$	0.07162	$0.0720 \pm 0.0011$
$A^{\text{kSZ}}$	1.24	$4.73^{+2.8}_{-1.9}$	$\Omega_m$	0.3116	$0.306^{+0.018}_{-0.021}$			

Best-fit  $\chi^2_{\text{eff}} = 8509.53$ ; R-1 = 0.08654

$\chi^2_{\text{eff}}$ : CMB - lensing: 10.24 CamSpec: 7807.75 highL: 691.24

## 4 AphiPhi

### 4.1 base\_AphiPhi\_planck\_lowl\_lowLike\_highL\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022173	$0.02216 \pm 0.00026$	$\beta_1^1$	0.42	$0.37 \pm 0.56$	$\sigma_8$	0.8297	$0.825 \pm 0.012$
$\Omega_c h^2$	0.11913	$0.1189 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.44	$10.66 \pm 0.58$	$z_{\text{re}}$	11.44	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04137	$1.04141 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	75.75	$76.9 \pm 4.5$	$H_0$	67.65	$67.8 \pm 1.1$
$\tau$	0.0942	$0.091 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.47	$7.85^{+1.4}_{-1.7}$	$10^9 A_s$	2.211	$2.194^{+0.052}_{-0.058}$
$n_s$	0.9611	$0.9608 \pm 0.0067$	$A_{150}^{\text{PS, SPT}}$	9.951	$10.23 \pm 0.51$	$\Omega_m h^2$	0.14195	$0.1417 \pm 0.0024$
$\ln(10^{10} A_s)$	3.0963	$3.088 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	72.99	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09603	$0.09598 \pm 0.00056$
$A_L^{\phi\phi}$	0.978	$0.990 \pm 0.054$	$r_{95 \times 150}^{\text{PS}}$	0.804	$0.832 \pm 0.088$	$Y_p$	0.247755	$0.24775 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$214 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.555	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8316	$1.830 \pm 0.012$
$A_{143}^{\text{PS}}$	71.8	$72.6 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9076	$0.934^{+0.023}_{-0.026}$	Age/Gyr	13.7996	$13.798 \pm 0.045$
$A_{217}^{\text{PS}}$	58.8	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	$z_*$	1090.197	$1090.19 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.29	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.839	$0.84 \pm 0.20$	$r_*$	144.80	$144.87 \pm 0.58$
$A_{217}^{\text{CIB}}$	53.2	$50.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9921	$0.9926 \pm 0.0073$	$100\theta_*$	1.04152	$1.04156 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.76	$2.51^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0032	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.47	$1059.45 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.822^{+0.069}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9883	$0.9889 \pm 0.0072$	$r_{\text{drag}}$	147.53	$147.61 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9618	$0.965 \pm 0.010$	$k_D$	0.14015	$0.14005 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.670	$0.643 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9849	$0.985 \pm 0.020$	$100\theta_D$	0.161240	$0.16128 \pm 0.00031$
$c_{100}$	1.000611	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9860	$0.9890 \pm 0.0095$	$z_{\text{eq}}$	3377	$3371 \pm 57$
$c_{217}$	0.99729	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0182	$1.026 \pm 0.023$	$100\theta_{\text{eq}}$	0.8177	$0.819 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.387$	$\Omega_\Lambda$	0.6899	$0.691^{+0.016}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07170	$0.07180 \pm 0.00086$
$A^{\text{kSZ}}$	0.97	$4.71^{+2.6}_{-2.0}$	$\Omega_m$	0.3101	$0.309 \pm 0.015$			

Best-fit  $\chi_{\text{eff}}^2 = 10517.33$ ; R-1 =0.00870

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.49 lensing: 9.61 lowl: -6.52 CamSpec: 7808.50 highL: 691.17

## 5 alpha1

### 5.1 base\_alpha1\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022108	$0.02216 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.446	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09607	$0.09611 \pm 0.00059$
$\Omega_c h^2$	0.12114	$0.1215 \pm 0.0028$	$\gamma^{\text{CIB}}$	0.546	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247727	$0.24775 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04097	$1.04071 \pm 0.00071$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8481	$1.848 \pm 0.015$
$\tau$	0.0912	$0.096^{+0.014}_{-0.016}$	$c_{217}$	0.99650	$0.9965 \pm 0.0014$	Age/Gyr	13.8267	$13.830 \pm 0.049$
$\alpha_{-1}$	-0.00068	$-0.0033^{+0.0032}_{-0.0014}$	$\xi^{\text{tSZ-CIB}}$	0.19	—	$z_*$	1090.45	$1090.42 \pm 0.53$
$n_s$	0.9570	$0.9505 \pm 0.0089$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.33	$144.19 \pm 0.64$
$\ln(10^{10} A_s)$	3.0991	$3.109^{+0.027}_{-0.031}$	$\beta_1^1$	0.71	$0.60 \pm 0.57$	$100\theta_*$	1.04112	$1.04086 \pm 0.00070$
$A_{100}^{\text{PS}}$	162	$177 \pm 60$	$\Omega_\Lambda$	0.6771	$0.674^{+0.019}_{-0.017}$	$z_{\text{drag}}$	1059.47	$1059.64 \pm 0.61$
$A_{143}^{\text{PS}}$	68.7	$53 \pm 10$	$\Omega_m$	0.3229	$0.326^{+0.017}_{-0.019}$	$r_{\text{drag}}$	147.07	$146.92 \pm 0.65$
$A_{217}^{\text{PS}}$	121.3	$105^{+20}_{-20}$	$\sigma_8$	0.8333	$0.834 \pm 0.013$	$k_D$	0.14058	$0.14079 \pm 0.00071$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.25	$11.6 \pm 1.2$	$100\theta_D$	0.161207	$0.16108 \pm 0.00037$
$A_{217}^{\text{CIB}}$	25.1	$30^{+6}_{-9}$	$H_0$	66.76	$66.6 \pm 1.2$	$z_{\text{eq}}$	3423	$3433 \pm 64$
$A_{143}^{\text{tSZ}}$	5.31	—	$10^9 A_s$	2.218	$2.241^{+0.059}_{-0.070}$	$100\theta_{\text{eq}}$	0.8089	$0.807 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.903	$> 0.847$	$\Omega_m h^2$	0.14390	$0.1443 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07099	$0.07084 \pm 0.00094$

Best-fit  $\chi_{\text{eff}}^2 = 9804.48$ ; R-1 = 0.00835

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.36 lowl: -8.79 CamSpec: 7798.32

## 5.2 base\_alpha1\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022303	$0.02231 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.693	$0.46^{+0.26}_{-0.23}$	$\Omega_m h^3$	0.09616	$0.09614 \pm 0.00058$
$\Omega_c h^2$	0.11881	$0.1193 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.544	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247811	$0.24781 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04123	$1.04100 \pm 0.00067$	$c_{100}$	1.000604	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8383	$1.838 \pm 0.012$
$\tau$	0.0928	$0.094^{+0.013}_{-0.015}$	$c_{217}$	0.99646	$0.9964 \pm 0.0014$	Age/Gyr	13.7891	$13.798 \pm 0.045$
$\alpha_{-1}$	-0.00054	$-0.0027^{+0.0028}_{-0.0013}$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.001	$1090.05 \pm 0.48$
$n_s$	0.9632	$0.9559 \pm 0.0082$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.78	$144.65 \pm 0.53$
$\ln(10^{10} A_s)$	3.0970	$3.099 \pm 0.026$	$\beta_1^1$	0.66	$0.53 \pm 0.57$	$100\theta_*$	1.04137	$1.04113 \pm 0.00066$
$A_{100}^{\text{PS}}$	146	$175 \pm 60$	$\Omega_\Lambda$	0.6919	$0.688^{+0.015}_{-0.014}$	$z_{\text{drag}}$	1059.78	$1059.82 \pm 0.61$
$A_{143}^{\text{PS}}$	62.2	$50 \pm 10$	$\Omega_m$	0.3081	$0.312 \pm 0.014$	$r_{\text{drag}}$	147.47	$147.33 \pm 0.54$
$A_{217}^{\text{PS}}$	119.8	$102^{+20}_{-20}$	$\sigma_8$	0.8269	$0.8242 \pm 0.0099$	$k_D$	0.14031	$0.14046 \pm 0.00063$
$A_{143}^{\text{CIB}}$	0.0	$< 11.6$	$z_{\text{re}}$	11.27	$11.3 \pm 1.1$	$100\theta_D$	0.161048	$0.16099 \pm 0.00037$
$A_{217}^{\text{CIB}}$	24.4	$30^{+7}_{-9}$	$H_0$	67.83	$67.6 \pm 1.0$	$z_{\text{eq}}$	3372	$3384 \pm 51$
$A_{143}^{\text{tSZ}}$	6.24	—	$10^9 A_s$	2.213	$2.219^{+0.054}_{-0.063}$	$100\theta_{\text{eq}}$	0.8188	$0.8165 \pm 0.0097$
$r_{143 \times 217}^{\text{PS}}$	0.909	$> 0.840$	$\Omega_m h^2$	0.14176	$0.1423 \pm 0.0021$	$r_{\text{drag}}/D_V(0.57)$	0.07178	$0.07158 \pm 0.00078$

Best-fit  $\chi_{\text{eff}}^2 = 9814.77$ ; R-1 = 0.01834

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.26 lensing: 9.88 lowl: -9.15 CamSpec: 7799.18

### 5.3 base\_alpha1\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022243	$0.02229 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.549	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09607	$0.09613 \pm 0.00059$
$\Omega_c h^2$	0.11896	$0.1193 \pm 0.0018$	$\gamma^{\text{CIB}}$	0.551	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247785	$0.24780 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04123	$1.04108 \pm 0.00062$	$c_{100}$	1.000594	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8382	$1.838 \pm 0.011$
$\tau$	0.0931	$0.099^{+0.014}_{-0.016}$	$c_{217}$	0.99644	$0.9964 \pm 0.0014$	Age/Gyr	13.7958	$13.797 \pm 0.038$
$\alpha_{-1}$	-0.00048	$-0.0027^{+0.0028}_{-0.0013}$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.089	$1090.07 \pm 0.41$
$n_s$	0.9630	$0.9564 \pm 0.0070$	$A^{\text{kSZ}}$	0.6	—	$r_*$	144.787	$144.67 \pm 0.45$
$\ln(10^{10} A_s)$	3.0976	$3.109^{+0.028}_{-0.032}$	$\beta_1^1$	0.71	$0.55 \pm 0.57$	$100\theta_*$	1.04138	$1.04121 \pm 0.00062$
$A_{100}^{\text{PS}}$	153	$174 \pm 60$	$\Omega_\Lambda$	0.6908	$0.689^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1059.63	$1059.77 \pm 0.61$
$A_{143}^{\text{PS}}$	64.7	$52 \pm 10$	$\Omega_m$	0.3092	$0.311 \pm 0.011$	$r_{\text{drag}}$	147.501	$147.36 \pm 0.49$
$A_{217}^{\text{PS}}$	121.0	$104^{+20}_{-20}$	$\sigma_8$	0.8273	$0.829 \pm 0.012$	$k_D$	0.14024	$0.14041 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.32	$11.8 \pm 1.2$	$100\theta_D$	0.161127	$0.16103 \pm 0.00037$
$A_{217}^{\text{CIB}}$	24.7	$29^{+6}_{-9}$	$H_0$	67.73	$67.60 \pm 0.79$	$z_{\text{eq}}$	3374.1	$3383 \pm 41$
$A_{143}^{\text{tSZ}}$	6.06	—	$10^9 A_s$	2.214	$2.242^{+0.061}_{-0.074}$	$100\theta_{\text{eq}}$	0.8182	$0.8167 \pm 0.0076$
$r_{143 \times 217}^{\text{PS}}$	0.912	$> 0.847$	$\Omega_m h^2$	0.14185	$0.1422 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07173	$0.07161 \pm 0.00060$

Best-fit  $\chi^2_{\text{eff}} = 9806.49$ ; R-1 = 0.01545

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.22 DR7: 1.29 6DF: 0.01 CMB - lowLike: 2014.30 lowl: -9.05 CamSpec: 7799.17

## 5.4 base\_alpha1\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022325	$0.02238^{+0.00028}_{-0.00031}$	$r_{143 \times 217}^{\text{CIB}}$	0.683	$0.44 \pm 0.23$	$\Omega_m h^3$	0.09622	$0.09622 \pm 0.00059$
$\Omega_c h^2$	0.11868	$0.1183 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.535	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247821	$0.24784^{+0.00012}_{-0.00013}$
$100\theta_{\text{MC}}$	1.04133	$1.04126 \pm 0.00068$	$c_{100}$	1.000615	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8382	$1.833 \pm 0.014$
$\tau$	0.0930	$0.101^{+0.014}_{-0.017}$	$c_{217}$	0.99654	$0.9964 \pm 0.0014$	Age/Gyr	13.7835	$13.778 \pm 0.046$
$\alpha_{-1}$	-0.00073	$-0.0026^{+0.0028}_{-0.0014}$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$z_*$	1089.963	$1089.86 \pm 0.49$
$n_s$	0.9628	$0.9591 \pm 0.0086$	$A^{\text{kSZ}}$	0.8	—	$r_*$	144.80	$144.85 \pm 0.60$
$\ln(10^{10} A_s)$	3.0975	$3.111^{+0.029}_{-0.033}$	$\beta_1^1$	0.70	$0.53 \pm 0.58$	$100\theta_*$	1.04146	$1.04139 \pm 0.00067$
$A_{100}^{\text{PS}}$	163	$173 \pm 60$	$\Omega_\Lambda$	0.6930	$0.695 \pm 0.015$	$z_{\text{drag}}$	1059.82	$1059.92 \pm 0.62$
$A_{143}^{\text{PS}}$	66.5	$51 \pm 10$	$\Omega_m$	0.3070	$0.305 \pm 0.015$	$r_{\text{drag}}$	147.48	$147.52 \pm 0.62$
$A_{217}^{\text{PS}}$	120.7	$104^{+20}_{-20}$	$\sigma_8$	0.8254	$0.827 \pm 0.013$	$k_D$	0.14032	$0.14032 \pm 0.00071$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$z_{\text{re}}$	11.28	$11.9 \pm 1.2$	$100\theta_D$	0.161035	$0.16097 \pm 0.00038$
$A_{217}^{\text{CIB}}$	24.4	$29^{+7}_{-9}$	$H_0$	67.93	$68.1 \pm 1.1$	$z_{\text{eq}}$	3369	$3362 \pm 57$
$A_{143}^{\text{tSZ}}$	5.30	—	$10^9 A_s$	2.214	$2.245^{+0.063}_{-0.075}$	$100\theta_{\text{eq}}$	0.8194	$0.821 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.899	$> 0.848$	$\Omega_m h^2$	0.14165	$0.1413 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07185	$0.07197 \pm 0.00087$

Best-fit  $\chi^2_{\text{eff}} = 9811.32$ ; R-1 = 0.02695

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.24 lowl: -9.32 CamSpec: 7799.77 Hubble - HST: 5.95



## 5.5 base\_alpha1\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02229 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.462	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09612	$0.09613 \pm 0.00059$
$\Omega_c h^2$	0.11968	$0.1194 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.553	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247771	$0.24780 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04120	$1.04105 \pm 0.00069$	$c_{100}$	1.000585	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8419	$1.838 \pm 0.014$
$\tau$	0.0924	$0.099^{+0.014}_{-0.016}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.8034	$13.798 \pm 0.047$
$\alpha_{-1}$	-0.00049	$-0.0027^{+0.0029}_{-0.0014}$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.195	$1090.07 \pm 0.50$
$n_s$	0.9613	$0.9562 \pm 0.0087$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.63	$144.65 \pm 0.60$
$\ln(10^{10} A_s)$	3.0982	$3.110^{+0.028}_{-0.032}$	$\beta_1^1$	0.71	$0.55 \pm 0.57$	$100\theta_*$	1.04134	$1.04119 \pm 0.00069$
$A_{100}^{\text{PS}}$	159	$174 \pm 60$	$\Omega_\Lambda$	0.6866	$0.688 \pm 0.016$	$z_{\text{drag}}$	1059.63	$1059.78 \pm 0.62$
$A_{143}^{\text{PS}}$	67.8	$52 \pm 10$	$\Omega_m$	0.3134	$0.312 \pm 0.016$	$r_{\text{drag}}$	147.35	$147.35 \pm 0.62$
$A_{217}^{\text{PS}}$	121.9	$105^{+20}_{-20}$	$\sigma_8$	0.8295	$0.829 \pm 0.013$	$k_D$	0.14037	$0.14043 \pm 0.00070$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.29	$11.8 \pm 1.2$	$100\theta_D$	0.161144	$0.16103 \pm 0.00037$
$A_{217}^{\text{CIB}}$	25.1	$29^{+6}_{-9}$	$H_0$	67.43	$67.6 \pm 1.1$	$z_{\text{eq}}$	3390	$3385 \pm 59$
$A_{143}^{\text{tSZ}}$	5.68	—	$10^9 A_s$	2.216	$2.242^{+0.061}_{-0.073}$	$100\theta_{\text{eq}}$	0.8152	$0.817 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.905	$> 0.847$	$\Omega_m h^2$	0.14253	$0.1423 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07150	$0.07159 \pm 0.00089$

Best-fit  $\chi^2_{\text{eff}} = 10234.40$ ; R-1 = 0.01563

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.31 lowl: -8.92 CamSpec: 7798.76 SN - SNLS: 429.71

## 5.6 base\_alpha1\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022196	$0.02222 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.383	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09609	$0.09612 \pm 0.00059$
$\Omega_c h^2$	0.11991	$0.1207 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.528	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247765	$0.24777 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04112	$1.04085 \pm 0.00070$	$c_{100}$	1.000599	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8426	$1.844 \pm 0.014$
$\tau$	0.0917	$0.097^{+0.014}_{-0.016}$	$c_{217}$	0.99643	$0.9964 \pm 0.0014$	Age/Gyr	13.8084	$13.817 \pm 0.047$
$\alpha_{-1}$	-0.00062	$-0.0031^{+0.0031}_{-0.0014}$	$\xi^{\text{tSZ-CIB}}$	0.12	—	$z_*$	1090.23	$1090.28 \pm 0.51$
$n_s$	0.9605	$0.9527 \pm 0.0087$	$A^{\text{kSZ}}$	0.5	—	$r_*$	144.58	$144.37 \pm 0.61$
$\ln(10^{10} A_s)$	3.0971	$3.109^{+0.027}_{-0.031}$	$\beta_1^1$	0.74	$0.58 \pm 0.57$	$100\theta_*$	1.04126	$1.04099 \pm 0.00069$
$A_{100}^{\text{PS}}$	158	$176 \pm 60$	$\Omega_\Lambda$	0.6849	$0.680^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.59	$1059.70 \pm 0.61$
$A_{143}^{\text{PS}}$	66.3	$53 \pm 10$	$\Omega_m$	0.3151	$0.320^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.30	$147.09 \pm 0.62$
$A_{217}^{\text{PS}}$	123.2	$105^{+20}_{-20}$	$\sigma_8$	0.8293	$0.832 \pm 0.013$	$k_D$	0.14041	$0.14065 \pm 0.00070$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.23	$11.7 \pm 1.2$	$100\theta_D$	0.161143	$0.16106 \pm 0.00037$
$A_{217}^{\text{CIB}}$	24.0	$30^{+6}_{-9}$	$H_0$	67.31	$67.0 \pm 1.2$	$z_{\text{eq}}$	3396	$3414 \pm 60$
$A_{143}^{\text{tSZ}}$	5.99	—	$10^9 A_s$	2.213	$2.242^{+0.059}_{-0.071}$	$100\theta_{\text{eq}}$	0.8141	$0.811 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.847$	$\Omega_m h^2$	0.14275	$0.1435 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07141	$0.07114 \pm 0.00089$

Best-fit  $\chi^2_{\text{eff}} = 9935.11$ ; R-1 = 0.01060

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.30 lowl: -9.06 CamSpec: 7798.57 SN - Union2.1: 130.56

## 5.7 base\_alpha1\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022102	$0.02220 \pm 0.00028$	$\beta_1^1$	0.52	$0.48 \pm 0.55$	$\sigma_8$	0.8330	$0.834 \pm 0.013$
$\Omega_c h^2$	0.12184	$0.1217 \pm 0.0028$	$A_{148}^{\text{PS, ACT}}$	10.23	$10.54 \pm 0.59$	$z_{\text{re}}$	11.36	$11.8 \pm 1.2$
$100\theta_{\text{MC}}$	1.04072	$1.04065 \pm 0.00068$	$A_{218}^{\text{PS, ACT}}$	75.51	$76.8 \pm 4.5$	$H_0$	66.44	$66.6 \pm 1.2$
$\tau$	0.0923	$0.098^{+0.013}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.21	$7.70^{+1.4}_{-1.6}$	$10^9 A_s$	2.221	$2.249^{+0.058}_{-0.070}$
$\alpha_{-1}$	-0.00135	$-0.0039^{+0.0035}_{-0.0016}$	$A_{150}^{\text{PS, SPT}}$	9.73	$10.09 \pm 0.51$	$\Omega_m h^2$	0.14459	$0.1446 \pm 0.0027$
$n_s$	0.9501	$0.9476 \pm 0.0085$	$A_{220}^{\text{PS, SPT}}$	72.14	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09606	$0.09618 \pm 0.00057$
$\ln(10^{10} A_s)$	3.1006	$3.113^{+0.027}_{-0.030}$	$r_{95 \times 150}^{\text{PS}}$	0.806	$0.832 \pm 0.089$	$Y_P$	0.247725	$0.24777 \pm 0.00012$
$A_{100}^{\text{PS}}$	207	$221 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.566	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8468	$1.848 \pm 0.015$
$A_{143}^{\text{PS}}$	73.7	$73.9 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9120	$0.937 \pm 0.024$	Age/Gyr	13.8370	$13.828 \pm 0.047$
$A_{217}^{\text{PS}}$	61.0	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.416	$0.43 \pm 0.19$	$z_*$	1090.53	$1090.39 \pm 0.52$
$A_{143}^{\text{CIB}}$	3.34	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.85 \pm 0.20$	$r_*$	144.15	$144.11 \pm 0.64$
$A_{217}^{\text{CIB}}$	53.2	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9908	$0.9917 \pm 0.0073$	$100\theta_*$	1.04088	$1.04079 \pm 0.00068$
$A_{143}^{\text{tSZ}}$	4.92	$2.46^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0024	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.51	$1059.75 \pm 0.58$
$r_{143 \times 217}^{\text{PS}}$	0.827	$0.824^{+0.070}_{-0.078}$	$y_{148}^{\text{ACTe}}$	0.9869	$0.9880 \pm 0.0072$	$r_{\text{drag}}$	146.90	$146.83 \pm 0.65$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9605	$0.964 \pm 0.010$	$k_D$	0.14076	$0.14091 \pm 0.00071$
$\gamma^{\text{CIB}}$	0.670	$0.639 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9853	$0.984 \pm 0.020$	$100\theta_D$	0.161157	$0.16101 \pm 0.00035$
$c_{100}$	1.000613	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9843	$0.9875 \pm 0.0096$	$z_{\text{eq}}$	3440	$3439 \pm 64$
$c_{217}$	0.99732	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0150	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8058	$0.806 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.422$	$\Omega_\Lambda$	0.6724	$0.673^{+0.019}_{-0.017}$	$r_{\text{drag}}/D_V(0.57)$	0.07073	$0.07078 \pm 0.00093$
$A^{\text{kSZ}}$	1.40	$5.31^{+2.7}_{-1.9}$	$\Omega_m$	0.3276	$0.327^{+0.017}_{-0.019}$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.89$ ; R-1 =0.00720

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.39 lowl: -8.90 CamSpec: 7808.64 highL: 692.69

## 5.8 base\_alpha1\_planck\_lowL\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022305	$0.02232 \pm 0.00028$	$\beta_1^1$	0.45	$0.42 \pm 0.55$	$\sigma_8$	0.8261	$0.8247^{+0.0095}_{-0.011}$
$\Omega_c h^2$	0.11931	$0.1195 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.44	$10.69 \pm 0.58$	$z_{\text{re}}$	11.44	$11.5 \pm 1.1$
$100\theta_{\text{MC}}$	1.04108	$1.04092 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	76.30	$76.9 \pm 4.6$	$H_0$	67.60	$67.5 \pm 1.0$
$\tau$	0.0947	$0.095^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.56	$7.93^{+1.4}_{-1.6}$	$10^9 A_s$	2.220	$2.225^{+0.052}_{-0.063}$
$\alpha_{-1}$	-0.00144	$-0.0032^{+0.0030}_{-0.0013}$	$A_{150}^{\text{PS, SPT}}$	9.98	$10.26 \pm 0.51$	$\Omega_m h^2$	0.14226	$0.1425 \pm 0.0021$
$n_s$	0.9559	$0.9533 \pm 0.0074$	$A_{220}^{\text{PS, SPT}}$	73.28	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09617	$0.09617 \pm 0.00059$
$\ln(10^{10} A_s)$	3.0999	$3.102^{+0.024}_{-0.028}$	$r_{95 \times 150}^{\text{PS}}$	0.797	$0.831 \pm 0.088$	$Y_P$	0.247812	$0.24782 \pm 0.00012$
$A_{100}^{\text{PS}}$	209	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.543	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8366	$1.838 \pm 0.012$
$A_{143}^{\text{PS}}$	72.9	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9076	$0.934 \pm 0.024$	Age/Gyr	13.7957	$13.799 \pm 0.044$
$A_{217}^{\text{PS}}$	60.0	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.422	$0.43^{+0.19}_{-0.21}$	$z_*$	1090.042	$1090.04 \pm 0.47$
$A_{143}^{\text{CIB}}$	3.22	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.85 \pm 0.20$	$r_*$	144.65	$144.58 \pm 0.52$
$A_{217}^{\text{CIB}}$	52.51	$50.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9924 \pm 0.0073$	$100\theta_*$	1.04122	$1.04105 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.58	$2.41^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.82	$1059.87 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.825^{+0.067}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9885 \pm 0.0073$	$r_{\text{drag}}$	147.34	$147.26 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.927$	$y_{217}^{\text{ACTe}}$	0.9618	$0.965 \pm 0.010$	$k_D$	0.14045	$0.14055 \pm 0.00063$
$\gamma^{\text{CIB}}$	0.659	$0.643 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9854	$0.985 \pm 0.020$	$100\theta_D$	0.161004	$0.16095 \pm 0.00035$
$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9862	$0.9890 \pm 0.0095$	$z_{\text{eq}}$	3384	$3390 \pm 51$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0182	$1.026^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8165	$0.8156 \pm 0.0096$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.417$	$\Omega_\Lambda$	0.6887	$0.687 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07160	$0.07151 \pm 0.00077$
$A^{\text{kSZ}}$	1.20	$4.76^{+2.6}_{-2.0}$	$\Omega_m$	0.3113	$0.313 \pm 0.014$			

Best-fit  $\chi^2_{\text{eff}} = 10515.45$ ; R-1 =0.02939

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.30 lensing: 9.73 lowL: -9.45 CamSpec: 7809.84 highL: 690.94

## 5.9 base\_alpha1\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022281	$0.02233 \pm 0.00026$	$\beta_1^1$	0.50	$0.42 \pm 0.55$	$\sigma_8$	0.8261	$0.829 \pm 0.012$
$\Omega_c h^2$	0.11936	$0.1193 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.55 \pm 0.59$	$z_{\text{re}}$	11.52	$12.0 \pm 1.2$
$100\theta_{\text{MC}}$	1.04109	$1.04102 \pm 0.00060$	$A_{218}^{\text{PS, ACT}}$	76.14	$76.9 \pm 4.6$	$H_0$	67.57	$67.60 \pm 0.79$
$\tau$	0.0956	$0.101^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.34	$7.71^{+1.4}_{-1.6}$	$10^9 A_s$	2.223	$2.250^{+0.062}_{-0.072}$
$\alpha_{-1}$	-0.00149	$-0.0032^{+0.0031}_{-0.0014}$	$A_{150}^{\text{PS, SPT}}$	9.79	$10.11 \pm 0.51$	$\Omega_m h^2$	0.14228	$0.1423 \pm 0.0017$
$n_s$	0.9554	$0.9538 \pm 0.0065$	$A_{220}^{\text{PS, SPT}}$	73.03	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09614	$0.09619 \pm 0.00059$
$\ln(10^{10} A_s)$	3.1014	$3.113 \pm 0.029$	$r_{95 \times 150}^{\text{PS}}$	0.800	$0.832 \pm 0.089$	$Y_P$	0.247802	$0.24782 \pm 0.00011$
$A_{100}^{\text{PS}}$	213	$217 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.548	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8363	$1.837 \pm 0.010$
$A_{143}^{\text{PS}}$	72.8	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9095	$0.937 \pm 0.023$	Age/Gyr	13.7979	$13.795 \pm 0.038$
$A_{217}^{\text{PS}}$	60.5	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.445	$0.43 \pm 0.19$	$z_*$	1090.077	$1090.02 \pm 0.40$
$A_{143}^{\text{CIB}}$	3.28	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.85 \pm 0.20$	$r_*$	144.655	$144.63 \pm 0.45$
$A_{217}^{\text{CIB}}$	52.5	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9924 \pm 0.0073$	$100\theta_*$	1.04123	$1.04115 \pm 0.00059$
$A_{143}^{\text{tSZ}}$	4.74	$2.48^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0030	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.74	$1059.87 \pm 0.59$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.822^{+0.071}_{-0.079}$	$y_{148}^{\text{ACTe}}$	0.9875	$0.9886 \pm 0.0071$	$r_{\text{drag}}$	147.354	$147.31 \pm 0.49$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9611	$0.965 \pm 0.010$	$k_D$	0.14042	$0.14050 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.658	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9859	$0.985 \pm 0.020$	$100\theta_D$	0.161040	$0.16097 \pm 0.00035$
$c_{100}$	1.000605	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9848	$0.9885 \pm 0.0096$	$z_{\text{eq}}$	3384.5	$3385 \pm 41$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0190	$1.025^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8164	$0.8164 \pm 0.0077$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.414$	$\Omega_\Lambda$	0.6884	$0.688^{+0.012}_{-0.010}$	$r_{\text{drag}}/D_V(0.57)$	0.07158	$0.07159 \pm 0.00060$
$A^{\text{kSZ}}$	1.59	$5.31^{+2.7}_{-1.9}$	$\Omega_m$	0.3116	$0.312^{+0.010}_{-0.012}$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.04$ ; R-1 = 0.01166

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.63 DR9: 0.11 6DF: 0.00 CMB - lowLike: 2014.35 lowl: -9.45 CamSpec: 7809.85 highL: 692.40

## 5.10 base\_alpha1\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022365	$0.02241 \pm 0.00028$	$\beta_1^1$	0.44	$0.39 \pm 0.55$	$\sigma_8$	0.8248	$0.827 \pm 0.013$
$\Omega_c h^2$	0.11870	$0.1185 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.32	$10.57 \pm 0.58$	$z_{\text{re}}$	11.62	$12.1 \pm 1.2$
$100\theta_{\text{MC}}$	1.04125	$1.04118 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	76.41	$77.0 \pm 4.5$	$H_0$	67.93	$68.0 \pm 1.1$
$\tau$	0.0972	$0.103^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.45	$7.74^{+1.4}_{-1.6}$	$10^9 A_s$	2.227	$2.256^{+0.062}_{-0.073}$
$\alpha_{-1}$	-0.00159	$-0.0032^{+0.0032}_{-0.0014}$	$A_{150}^{\text{PS, SPT}}$	9.86	$10.13 \pm 0.51$	$\Omega_m h^2$	0.14171	$0.1416 \pm 0.0024$
$n_s$	0.9569	$0.9560 \pm 0.0078$	$A_{220}^{\text{PS, SPT}}$	73.37	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09626	$0.09627 \pm 0.00059$
$\ln(10^{10} A_s)$	3.1034	$3.116^{+0.028}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.788	$0.831 \pm 0.089$	$Y_P$	0.247838	$0.24786 \pm 0.00012$
$A_{100}^{\text{PS}}$	206	$215 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.540	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8339	$1.833^{+0.012}_{-0.014}$
$A_{143}^{\text{PS}}$	71.9	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9120	$0.937 \pm 0.023$	Age/Gyr	13.7818	$13.778 \pm 0.045$
$A_{217}^{\text{PS}}$	59.8	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.43 \pm 0.19$	$z_*$	1089.913	$1089.84 \pm 0.47$
$A_{143}^{\text{CIB}}$	3.13	$3.25^{+0.81}_{-0.92}$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.84 \pm 0.20$	$r_*$	144.76	$144.78 \pm 0.59$
$A_{217}^{\text{CIB}}$	52.0	$49.7 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9920	$0.9928 \pm 0.0073$	$100\theta_*$	1.04139	$1.04130 \pm 0.00065$
$A_{143}^{\text{tSZ}}$	4.44	$2.49^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0036	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.89	$1060.00 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.820^{+0.072}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9890 \pm 0.0072$	$r_{\text{drag}}$	147.43	$147.44 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9619	$0.965 \pm 0.010$	$k_D$	0.14040	$0.14043 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.656	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9848	$0.986 \pm 0.020$	$100\theta_D$	0.160968	$0.16090 \pm 0.00035$
$c_{100}$	1.000598	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9860	$0.9893 \pm 0.0096$	$z_{\text{eq}}$	3371	$3367 \pm 56$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0176	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8192	$0.820 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.009	$< 0.412$	$\Omega_\Lambda$	0.6929	$0.694^{+0.016}_{-0.014}$	$r_{\text{drag}}/D_V(0.57)$	0.07183	$0.07190 \pm 0.00085$
$A^{\text{kSZ}}$	2.10	$5.29^{+2.7}_{-1.9}$	$\Omega_m$	0.3071	$0.306^{+0.014}_{-0.016}$			

Best-fit  $\chi_{\text{eff}}^2 = 10513.69$ ; R-1 =0.02390

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.38 lowl: -9.57 CamSpec: 7810.72 highL: 692.08 Hubble - HST: 5.95

### 5.11 base\_alpha1\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022282	$0.02232 \pm 0.00028$	$\beta_1^1$	0.47	$0.42 \pm 0.55$	$\sigma_8$	0.8265	$0.829 \pm 0.013$
$\Omega_c h^2$	0.11949	$0.1195 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.31	$10.56 \pm 0.59$	$z_{\text{re}}$	11.54	$12.0 \pm 1.2$
$100\theta_{\text{MC}}$	1.04110	$1.04098 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	76.28	$76.9 \pm 4.6$	$H_0$	67.52	$67.5 \pm 1.1$
$\tau$	0.0957	$0.101^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.41	$7.72^{+1.4}_{-1.6}$	$10^9 A_s$	2.225	$2.252^{+0.061}_{-0.072}$
$\alpha_{-1}$	-0.00165	$-0.0034^{+0.0032}_{-0.0014}$	$A_{150}^{\text{PS, SPT}}$	9.85	$10.11 \pm 0.51$	$\Omega_m h^2$	0.14242	$0.1425 \pm 0.0024$
$n_s$	0.9548	$0.9533 \pm 0.0080$	$A_{220}^{\text{PS, SPT}}$	73.21	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09616	$0.09619 \pm 0.00059$
$\ln(10^{10} A_s)$	3.1022	$3.114^{+0.028}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.790	$0.832 \pm 0.089$	$Y_P$	0.247802	$0.24782 \pm 0.00012$
$A_{100}^{\text{PS}}$	209	$217 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.542	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8371	$1.838 \pm 0.013$
$A_{143}^{\text{PS}}$	72.5	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9116	$0.937 \pm 0.023$	Age/Gyr	13.7986	$13.797 \pm 0.046$
$A_{217}^{\text{PS}}$	60.5	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	$z_*$	1090.087	$1090.04 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.14	$3.25^{+0.82}_{-0.91}$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.84 \pm 0.20$	$r_*$	144.62	$144.59 \pm 0.60$
$A_{217}^{\text{CIB}}$	52.0	$49.7 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9915	$0.9924 \pm 0.0073$	$100\theta_*$	1.04123	$1.04111 \pm 0.00066$
$A_{143}^{\text{tSZ}}$	4.45	$2.48^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0035	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.78	$1059.87 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.822^{+0.071}_{-0.079}$	$y_{148}^{\text{ACTe}}$	0.9876	$0.9886 \pm 0.0072$	$r_{\text{drag}}$	147.31	$147.27 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	0.9999	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9612	$0.965 \pm 0.010$	$k_D$	0.14046	$0.14054 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.656	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9845	$0.985 \pm 0.020$	$100\theta_D$	0.161032	$0.16096 \pm 0.00035$
$c_{100}$	1.000593	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9855	$0.9885 \pm 0.0096$	$z_{\text{eq}}$	3388	$3389 \pm 58$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0174	$1.025^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8158	$0.816 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.0097	$< 0.416$	$\Omega_\Lambda$	0.6876	$0.687^{+0.017}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07154	$0.07153 \pm 0.00087$
$A^{\text{kSZ}}$	2.10	$5.31^{+2.7}_{-1.9}$	$\Omega_m$	0.3124	$0.313^{+0.015}_{-0.017}$			

Best-fit  $\chi_{\text{eff}}^2 = 10936.74$ ; R-1 = 0.01185

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.35 lowl: -9.52 CamSpec: 7809.94 highL: 692.23 SN - SNLS: 429.62

## 5.12 base\_alpha1\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022182	$0.02225^{+0.00027}_{-0.00030}$	$\beta_1^1$	0.44	$0.46 \pm 0.55$	$\sigma_8$	0.8300	$0.832 \pm 0.013$
$\Omega_c h^2$	0.12046	$0.1208 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.30	$10.55 \pm 0.59$	$z_{\text{re}}$	11.51	$11.9 \pm 1.2$
$100\theta_{\text{MC}}$	1.04098	$1.04079 \pm 0.00067$	$A_{218}^{\text{PS, ACT}}$	76.36	$76.8 \pm 4.6$	$H_0$	67.07	$67.0 \pm 1.2$
$\tau$	0.0947	$0.099^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.37	$7.71^{+1.4}_{-1.6}$	$10^9 A_s$	2.224	$2.250^{+0.059}_{-0.070}$
$\alpha_{-1}$	-0.00121	$-0.0037^{+0.0034}_{-0.0015}$	$A_{150}^{\text{PS, SPT}}$	9.83	$10.10 \pm 0.51$	$\Omega_m h^2$	0.14328	$0.1437 \pm 0.0025$
$n_s$	0.9533	$0.9499 \pm 0.0082$	$A_{220}^{\text{PS, SPT}}$	73.12	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09610	$0.09618 \pm 0.00058$
$\ln(10^{10} A_s)$	3.1019	$3.113^{+0.027}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.793	$0.832 \pm 0.089$	$Y_P$	0.247759	$0.24779 \pm 0.00012$
$A_{100}^{\text{PS}}$	207	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.545	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8403	$1.844 \pm 0.014$
$A_{143}^{\text{PS}}$	73.2	$73.4 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9117	$0.937 \pm 0.023$	Age/Gyr	13.8158	$13.816 \pm 0.046$
$A_{217}^{\text{PS}}$	61.4	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.30	$1090.25 \pm 0.50$
$A_{143}^{\text{CIB}}$	3.15	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.84 \pm 0.20$	$r_*$	144.45	$144.31 \pm 0.61$
$A_{217}^{\text{CIB}}$	51.8	$49.7 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9920 \pm 0.0073$	$100\theta_*$	1.04113	$1.04092 \pm 0.00066$
$A_{143}^{\text{tSZ}}$	4.47	$2.47^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0026	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.63	$1059.80 \pm 0.59$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.824^{+0.070}_{-0.078}$	$y_{148}^{\text{ACTe}}$	0.9873	$0.9882 \pm 0.0072$	$r_{\text{drag}}$	147.17	$147.01 \pm 0.62$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9611	$0.964 \pm 0.010$	$k_D$	0.14053	$0.14076 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.652	$0.639 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9836	$0.984 \pm 0.020$	$100\theta_D$	0.161128	$0.16099 \pm 0.00035$
$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9846	$0.9879 \pm 0.0096$	$z_{\text{eq}}$	3408	$3418 \pm 60$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0159	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8117	$0.810 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.0097	$< 0.420$	$\Omega_\Lambda$	0.6815	$0.679^{+0.018}_{-0.016}$	$r_{\text{drag}}/D_V(0.57)$	0.07121	$0.07108 \pm 0.00089$
$A^{\text{kSZ}}$	2.06	$5.32^{+2.7}_{-1.9}$	$\Omega_m$	0.3185	$0.321^{+0.016}_{-0.018}$			

Best-fit  $\chi_{\text{eff}}^2 = 10637.45$ ; R-1 =0.00792

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.42 lowl: -9.04 CamSpec: 7808.86 highL: 692.40 SN - Union2.1: 130.68



### 5.13 base\_alpha1\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022115	$0.02235 \pm 0.00037$	$r_{143 \times 217}^{\text{CIB}}$	0.553	$0.41^{+0.22}_{-0.28}$	$\Omega_m h^3$	0.09606	$0.09625 \pm 0.00063$
$\Omega_c h^2$	0.12101	$0.1201 \pm 0.0034$	$\gamma^{\text{CIB}}$	0.544	$0.53 \pm 0.13$	$Y_P$	0.247730	$0.24783 \pm 0.00016$
$100\theta_{\text{MC}}$	1.04097	$1.04085 \pm 0.00074$	$c_{100}$	1.000596	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8473	$1.842 \pm 0.017$
$\tau$	0.0910	$0.132^{+0.048}_{-0.042}$	$c_{217}$	0.99640	$0.9964 \pm 0.0014$	Age/Gyr	13.825	$13.801 \pm 0.061$
$\alpha_{-1}$	-0.00060	$-0.0044^{+0.0043}_{-0.0018}$	$\xi^{\text{tSZ-CIB}}$	0.24	—	$z_*$	1090.43	$1090.06 \pm 0.70$
$n_s$	0.9578	$0.956 \pm 0.011$	$A^{\text{kSZ}}$	1.03	$< 5.97$	$r_*$	144.36	$144.43 \pm 0.72$
$\ln(10^{10} A_s)$	3.098	$3.177^{+0.091}_{-0.078}$	$\beta_1^1$	0.73	$0.55 \pm 0.57$	$100\theta_*$	1.04111	$1.04097 \pm 0.00073$
$A_{100}^{\text{PS}}$	160	$169 \pm 60$	$\Omega_\Lambda$	0.6780	$0.684^{+0.023}_{-0.020}$	$z_{\text{drag}}$	1059.47	$1059.96 \pm 0.73$
$A_{143}^{\text{PS}}$	67.0	$51 \pm 10$	$\Omega_m$	0.3220	$0.316^{+0.020}_{-0.023}$	$r_{\text{drag}}$	147.10	$147.10 \pm 0.70$
$A_{217}^{\text{PS}}$	121.6	$106^{+20}_{-20}$	$\sigma_8$	0.8329	$0.858^{+0.033}_{-0.029}$	$k_D$	0.14055	$0.14073 \pm 0.00073$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$z_{\text{re}}$	11.23	$14.2^{+3.9}_{-2.6}$	$100\theta_D$	0.161202	$0.16090 \pm 0.00043$
$A_{217}^{\text{CIB}}$	24.5	$28^{+6}_{-9}$	$H_0$	66.81	$67.3 \pm 1.5$	$z_{\text{eq}}$	3420	$3403 \pm 75$
$A_{143}^{\text{tSZ}}$	5.44	—	$10^9 A_s$	2.216	$2.41 \pm 0.20$	$100\theta_{\text{eq}}$	0.8095	$0.813 \pm 0.014$
$r_{143 \times 217}^{\text{PS}}$	0.911	$> 0.850$	$\Omega_m h^2$	0.14377	$0.1430 \pm 0.0031$	$r_{\text{drag}}/D_V(0.57)$	0.07103	$0.0713 \pm 0.0012$

Best-fit  $\chi^2_{\text{eff}} = 7790.13$ ; R-1 = 0.01177

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.77 CamSpec: 7798.29

## 5.14 base\_alpha1\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022306	$0.02233^{+0.00033}_{-0.00039}$	$r_{143 \times 217}^{\text{CIB}}$	0.759	$0.45 \pm 0.22$	$\Omega_m h^3$	0.09613	$0.09611 \pm 0.00060$
$\Omega_c h^2$	0.11845	$0.1189 \pm 0.0034$	$\gamma^{\text{CIB}}$	0.588	$0.53 \pm 0.13$	$Y_P$	0.247812	$0.24782^{+0.00014}_{-0.00016}$
$100\theta_{\text{MC}}$	1.04132	$1.04104 \pm 0.00074$	$c_{100}$	1.000594	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8360	$1.836 \pm 0.017$
$\tau$	0.0939	$0.099 \pm 0.035$	$c_{217}$	0.99646	$0.9964^{+0.0013}_{-0.0015}$	Age/Gyr	13.785	$13.792^{+0.066}_{-0.058}$
$\alpha_{-1}$	-0.00041	$-0.0028^{+0.0030}_{-0.0014}$	$\xi^{\text{tSZ-CIB}}$	0.22	—	$z_*$	1089.97	$1089.99 \pm 0.68$
$n_s$	0.9645	$0.958 \pm 0.011$	$A^{\text{kSZ}}$	0.8	—	$r_*$	144.87	$144.74 \pm 0.73$
$\ln(10^{10} A_s)$	3.098	$3.109 \pm 0.063$	$\beta_1^1$	0.69	$0.51 \pm 0.56$	$100\theta_*$	1.04145	$1.04117 \pm 0.00072$
$A_{100}^{\text{PS}}$	148	$172 \pm 60$	$\Omega_\Lambda$	0.6941	$0.690 \pm 0.021$	$z_{\text{drag}}$	1059.74	$1059.84^{+0.66}_{-0.74}$
$A_{143}^{\text{PS}}$	62.1	$50 \pm 10$	$\Omega_m$	0.3059	$0.310 \pm 0.021$	$r_{\text{drag}}$	147.57	$147.42 \pm 0.71$
$A_{217}^{\text{PS}}$	117.1	$102^{+20}_{-20}$	$\sigma_8$	0.8268	$0.827 \pm 0.019$	$k_D$	0.14022	$0.14038^{+0.00076}_{-0.00069}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.4$	$z_{\text{re}}$	11.35	$11.6^{+3.2}_{-2.5}$	$100\theta_D$	0.161067	$0.16099 \pm 0.00040$
$A_{217}^{\text{CIB}}$	25.9	$29^{+6}_{-9}$	$H_0$	67.99	$67.8 \pm 1.6$	$z_{\text{eq}}$	3363	$3375 \pm 76$
$A_{143}^{\text{tSZ}}$	6.33	—	$10^9 A_s$	2.215	$2.24^{+0.13}_{-0.16}$	$100\theta_{\text{eq}}$	0.8204	$0.818 \pm 0.015$
$r_{143 \times 217}^{\text{PS}}$	0.942	$> 0.838$	$\Omega_m h^2$	0.14140	$0.1419 \pm 0.0032$	$r_{\text{drag}}/D_V(0.57)$	0.07192	$0.0717 \pm 0.0012$

Best-fit  $\chi^2_{\text{eff}} = 7800.68$ ; R-1 = 0.02598

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.72 lowl: -9.05 CamSpec: 7799.70

### 5.15 base\_alpha1\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022229	$0.02246 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.524	$0.39^{+0.20}_{-0.29}$	$\Omega_m h^3$	0.09609	$0.09631 \pm 0.00062$
$\Omega_c h^2$	0.11907	$0.1185 \pm 0.0019$	$\gamma^{\text{CIB}}$	0.536	$0.53 \pm 0.13$	$Y_P$	0.247779	$0.24788 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04130	$1.04107 \pm 0.00062$	$c_{100}$	1.000600	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8379	$1.835 \pm 0.011$
$\tau$	0.0934	$0.144^{+0.042}_{-0.034}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.7959	$13.776 \pm 0.042$
$\alpha_{-1}$	-0.00039	$-0.0044^{+0.0044}_{-0.0018}$	$\xi^{\text{tSZ-CIB}}$	0.14	—	$z_*$	1090.117	$1089.78 \pm 0.47$
$n_s$	0.9628	$0.9602 \pm 0.0074$	$A^{\text{kSZ}}$	1.72	$< 5.76$	$r_*$	144.770	$144.74 \pm 0.46$
$\ln(10^{10} A_s)$	3.098	$3.197^{+0.082}_{-0.066}$	$\beta_1^1$	0.69	$0.50 \pm 0.56$	$100\theta_*$	1.04144	$1.04119 \pm 0.00062$
$A_{100}^{\text{PS}}$	147	$165 \pm 60$	$\Omega_\Lambda$	0.6903	$0.694^{+0.012}_{-0.011}$	$z_{\text{drag}}$	1059.63	$1060.12 \pm 0.68$
$A_{143}^{\text{PS}}$	62.4	$50 \pm 10$	$\Omega_m$	0.3097	$0.306^{+0.011}_{-0.012}$	$r_{\text{drag}}$	147.486	$147.38 \pm 0.49$
$A_{217}^{\text{PS}}$	120.4	$106^{+20}_{-20}$	$\sigma_8$	0.8281	$0.863^{+0.031}_{-0.027}$	$k_D$	0.14024	$0.14053 \pm 0.00064$
$A_{143}^{\text{CIB}}$	0.00	$< 9.91$	$z_{\text{re}}$	11.35	$15.1^{+3.2}_{-2.1}$	$100\theta_D$	0.161153	$0.16082 \pm 0.00041$
$A_{217}^{\text{CIB}}$	24.1	$28^{+6}_{-9}$	$H_0$	67.70	$68.02 \pm 0.87$	$z_{\text{eq}}$	3376.3	$3368 \pm 43$
$A_{143}^{\text{tSZ}}$	6.24	—	$10^9 A_s$	2.216	$2.45 \pm 0.18$	$100\theta_{\text{eq}}$	0.8179	$0.8199 \pm 0.0081$
$r_{143 \times 217}^{\text{PS}}$	0.901	$> 0.851$	$\Omega_m h^2$	0.14194	$0.1416 \pm 0.0018$	$r_{\text{drag}}/D_V(0.57)$	0.07171	$0.07187 \pm 0.00064$

Best-fit  $\chi^2_{\text{eff}} = 7792.11$ ; R-1 = 0.01296

$\chi^2_{\text{eff}}$ : BAO - DR7: 1.34 6DF: 0.01 DR9: 0.20 CMB - lowl: -8.88 CamSpec: 7798.77

## 5.16 base\_alpha1\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022317	$0.02269 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.609	$0.38^{+0.18}_{-0.29}$	$\Omega_m h^3$	0.09612	$0.09647 \pm 0.00065$
$\Omega_c h^2$	0.11781	$0.1161 \pm 0.0028$	$\gamma^{\text{CIB}}$	0.536	$0.53 \pm 0.13$	$Y_P$	0.247817	$0.24797 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04150	$1.04143 \pm 0.00069$	$c_{100}$	1.000582	$1.00060 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8325	$1.824 \pm 0.015$
$\tau$	0.0950	$0.164^{+0.043}_{-0.036}$	$c_{217}$	0.99643	$0.9963 \pm 0.0014$	Age/Gyr	13.776	$13.732 \pm 0.055$
$\alpha_{-1}$	-0.00028	$-0.0047^{+0.0046}_{-0.0020}$	$\xi^{\text{tSZ-CIB}}$	0.34	—	$z_*$	1089.90	$1089.29 \pm 0.60$
$n_s$	0.9664	$0.9676 \pm 0.0098$	$A^{\text{kSZ}}$	1.10	$< 5.53$	$r_*$	145.03	$145.20 \pm 0.63$
$\ln(10^{10} A_s)$	3.098	$3.232^{+0.084}_{-0.067}$	$\beta_1^1$	0.65	$0.42 \pm 0.56$	$100\theta_*$	1.04163	$1.04153 \pm 0.00068$
$A_{100}^{\text{PS}}$	151	$158 \pm 60$	$\Omega_\Lambda$	0.6981	$0.708^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.74	$1060.46 \pm 0.73$
$A_{143}^{\text{PS}}$	64.1	$48 \pm 10$	$\Omega_m$	0.3019	$0.292^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.72	$147.77 \pm 0.64$
$A_{217}^{\text{PS}}$	122.0	$105^{+20}_{-10}$	$\sigma_8$	0.8249	$0.870^{+0.031}_{-0.025}$	$k_D$	0.14006	$0.14028^{+0.00077}_{-0.00069}$
$A_{143}^{\text{CIB}}$	0.00	$< 9.57$	$z_{\text{re}}$	11.43	$16.4^{+3.1}_{-2.1}$	$100\theta_D$	0.161100	$0.16065 \pm 0.00042$
$A_{217}^{\text{CIB}}$	23.5	$27^{+6}_{-9}$	$H_0$	68.28	$69.2 \pm 1.3$	$z_{\text{eq}}$	3348	$3317 \pm 63$
$A_{143}^{\text{tSZ}}$	5.69	—	$10^9 A_s$	2.216	$2.54 \pm 0.19$	$100\theta_{\text{eq}}$	0.8234	$0.830 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.930	$> 0.853$	$\Omega_m h^2$	0.14077	$0.1394 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07216	$0.0728 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 7796.85$ ; R-1 = 0.02136

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.96 CamSpec: 7799.87 Hubble - HST: 5.27

### 5.17 base\_alpha1\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022249	$0.02256 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.077	$0.39^{+0.19}_{-0.29}$	$\Omega_m h^3$	0.09611	$0.09635 \pm 0.00064$
$\Omega_c h^2$	0.11896	$0.1173 \pm 0.0030$	$\gamma^{\text{CIB}}$	0.539	$0.53 \pm 0.13$	$Y_P$	0.247788	$0.24792 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04130	$1.04122 \pm 0.00070$	$c_{100}$	1.000596	$1.00060 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8380	$1.829 \pm 0.015$
$\tau$	0.0945	$0.153^{+0.045}_{-0.037}$	$c_{217}$	0.99637	$0.9963 \pm 0.0014$	Age/Gyr	13.794	$13.757 \pm 0.057$
$\alpha_{-1}$	-0.00038	$-0.0045^{+0.0045}_{-0.0019}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.08	$1089.56 \pm 0.63$
$n_s$	0.9634	$0.964 \pm 0.010$	$A^{\text{kSZ}}$	0.00	$< 5.68$	$r_*$	144.78	$144.97 \pm 0.66$
$\ln(10^{10} A_s)$	3.100	$3.213^{+0.087}_{-0.070}$	$\beta_1^1$	0.70	$0.46 \pm 0.56$	$100\theta_*$	1.04143	$1.04133 \pm 0.00069$
$A_{100}^{\text{PS}}$	147	$162 \pm 60$	$\Omega_\Lambda$	0.6910	$0.701^{+0.019}_{-0.017}$	$z_{\text{drag}}$	1059.67	$1060.25 \pm 0.73$
$A_{143}^{\text{PS}}$	61.0	$49 \pm 10$	$\Omega_m$	0.3090	$0.299 \pm 0.018$	$r_{\text{drag}}$	147.49	$147.59 \pm 0.65$
$A_{217}^{\text{PS}}$	122.9	$105^{+20}_{-10}$	$\sigma_8$	0.8287	$0.866^{+0.032}_{-0.026}$	$k_D$	0.14025	$0.14038 \pm 0.00072$
$A_{143}^{\text{CIB}}$	1.09	$< 9.80$	$z_{\text{re}}$	11.44	$15.7^{+3.3}_{-2.2}$	$100\theta_D$	0.161127	$0.16075 \pm 0.00043$
$A_{217}^{\text{CIB}}$	24.4	$28^{+6}_{-9}$	$H_0$	67.75	$68.6 \pm 1.4$	$z_{\text{eq}}$	3374	$3343 \pm 66$
$A^{\text{tSZ}}_{143}$	6.87	—	$10^9 A_s$	2.220	$2.49 \pm 0.19$	$100\theta_{\text{eq}}$	0.8183	$0.825 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.893	$> 0.851$	$\Omega_m h^2$	0.14185	$0.1405 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07175	$0.0723 \pm 0.0011$

Best-fit  $\chi^2_{\text{eff}} = 8219.76$ ; R-1 = 0.01294

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.90 CamSpec: 7798.70 SN - SNLS: 429.31

## 5.18 base\_alpha1\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022184	$0.02242 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.471	$0.40^{+0.21}_{-0.28}$	$\Omega_m h^3$	0.09606	$0.09629 \pm 0.00063$
$\Omega_c h^2$	0.11996	$0.1190 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.554	$0.53 \pm 0.13$	$Y_P$	0.247760	$0.24786 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04108	$1.04099 \pm 0.00071$	$c_{100}$	1.000600	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8425	$1.837 \pm 0.016$
$\tau$	0.0927	$0.140^{+0.047}_{-0.039}$	$c_{217}$	0.99640	$0.9964 \pm 0.0014$	Age/Gyr	13.811	$13.785 \pm 0.058$
$\alpha_{-1}$	-0.00056	$-0.0045^{+0.0044}_{-0.0018}$	$\xi^{\text{tSZ-CIB}}$	0.15	—	$z_*$	1090.26	$1089.88 \pm 0.65$
$n_s$	0.9603	$0.959 \pm 0.010$	$A^{\text{kSZ}}$	0.96	$< 5.84$	$r_*$	144.57	$144.63 \pm 0.67$
$\ln(10^{10} A_s)$	3.099	$3.190^{+0.090}_{-0.073}$	$\beta_1^1$	0.73	$0.51 \pm 0.56$	$100\theta_*$	1.04123	$1.04111 \pm 0.00070$
$A_{100}^{\text{PS}}$	151	$166 \pm 60$	$\Omega_\Lambda$	0.6845	$0.690^{+0.021}_{-0.018}$	$z_{\text{drag}}$	1059.59	$1060.07 \pm 0.73$
$A_{143}^{\text{PS}}$	64.0	$51 \pm 10$	$\Omega_m$	0.3155	$0.310^{+0.018}_{-0.021}$	$r_{\text{drag}}$	147.30	$147.28 \pm 0.66$
$A_{217}^{\text{PS}}$	121.0	$106^{+20}_{-10}$	$\sigma_8$	0.8304	$0.861^{+0.033}_{-0.027}$	$k_D$	0.14040	$0.14060 \pm 0.00072$
$A_{143}^{\text{CIB}}$	0.0	$< 10.1$	$z_{\text{re}}$	11.33	$14.8^{+3.7}_{-2.4}$	$100\theta_D$	0.161153	$0.16084 \pm 0.00043$
$A_{217}^{\text{CIB}}$	24.7	$28^{+6}_{-9}$	$H_0$	67.27	$67.8 \pm 1.4$	$z_{\text{eq}}$	3397	$3380 \pm 69$
$A_{143}^{\text{tSZ}}$	6.33	—	$10^9 A_s$	2.218	$2.44 \pm 0.19$	$100\theta_{\text{eq}}$	0.8139	$0.818 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.913	$> 0.850$	$\Omega_m h^2$	0.14279	$0.1421 \pm 0.0029$	$r_{\text{drag}}/D_V(0.57)$	0.07138	$0.0717 \pm 0.0011$

Best-fit  $\chi^2_{\text{eff}} = 7920.73$ ; R-1 = 0.01131

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.93 CamSpec: 7798.55 SN - Union2.1: 130.58

## 5.19 base\_alpha1\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02249	$0.02271 \pm 0.00061$	$\sigma_8$	0.8156	$0.804 \pm 0.028$	$r_*$	145.51	$146.1^{+1.8}_{-1.6}$
$\Omega_c h^2$	0.1155	$0.1127^{+0.0067}_{-0.0083}$	$z_{\text{re}}$	10.78	$10.6 \pm 1.2$	$100\theta_*$	1.03941	$1.0410 \pm 0.0044$
$100\theta_{\text{MC}}$	1.03929	$1.0409 \pm 0.0044$	$H_0$	68.53	$70.4 \pm 4.2$	$z_{\text{drag}}$	1059.97	$1060.3 \pm 1.2$
$\tau$	0.0888	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.218	$2.198^{+0.072}_{-0.086}$	$r_{\text{drag}}$	148.16	$148.7 \pm 1.6$
$\alpha_{-1}$	-0.00009	$0.0012^{+0.0036}_{-0.0051}$	$\Omega_m h^2$	0.1386	$0.1361^{+0.0063}_{-0.0078}$	$k_D$	0.13973	$0.1393 \pm 0.0016$
$n_s$	0.9689	$0.978 \pm 0.026$	$\Omega_m h^3$	0.09499	$0.0955 \pm 0.0023$	$100\theta_D$	0.16060	$0.16068 \pm 0.00059$
$\ln(10^{10} A_s)$	3.0992	$3.090^{+0.034}_{-0.038}$	$Y_P$	0.247890	$0.24798 \pm 0.00026$	$z_{\text{eq}}$	3297	$3237^{+150}_{-190}$
$A_{\text{tSZ}}$	0.01	—	$10^9 A_s e^{-2\tau}$	1.8572	$1.839^{+0.039}_{-0.046}$	$100\theta_{\text{eq}}$	0.8317	$0.847 \pm 0.035$
$\Omega_\Lambda$	0.7049	$0.721^{+0.060}_{-0.037}$	Age/Gyr	13.813	$13.73 \pm 0.21$	$r_{\text{drag}}/D_V(0.57)$	0.07238	$0.0739 \pm 0.0033$
$\Omega_m$	0.2951	$0.279^{+0.037}_{-0.060}$	$z_*$	1089.47	$1089.0^{+1.2}_{-1.4}$			

Best-fit  $\chi^2_{\text{eff}} = 7557.85$ ; R-1 = 0.00708

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.85

## 5.20 base\_alpha1\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022427	$0.02249 \pm 0.00044$	$\sigma_8$	0.8169	$0.814 \pm 0.019$	$r_*$	145.35	$145.43 \pm 0.80$
$\Omega_c h^2$	0.11628	$0.1158 \pm 0.0025$	$z_{\text{re}}$	10.71	$10.8 \pm 1.2$	$100\theta_*$	1.03899	$1.0387 \pm 0.0026$
$100\theta_{\text{MC}}$	1.03887	$1.0386 \pm 0.0026$	$H_0$	68.04	$68.2 \pm 1.1$	$z_{\text{drag}}$	1059.89	$1060.0 \pm 1.1$
$\tau$	0.0876	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.218	$2.220^{+0.063}_{-0.076}$	$r_{\text{drag}}$	148.01	$148.08 \pm 0.91$
$\alpha_{-1}$	-0.00023	$-0.0012^{+0.0022}_{-0.0015}$	$\Omega_m h^2$	0.13935	$0.1389 \pm 0.0026$	$k_D$	0.13984	$0.1398 \pm 0.0012$
$n_s$	0.9658	$0.964^{+0.012}_{-0.014}$	$\Omega_m h^3$	0.09482	$0.0947 \pm 0.0019$	$100\theta_D$	0.16059	$0.16050 \pm 0.00056$
$\ln(10^{10} A_s)$	3.0990	$3.100^{+0.030}_{-0.033}$	$Y_P$	0.247864	$0.24789 \pm 0.00019$	$z_{\text{eq}}$	3314	$3305 \pm 63$
$A_{\text{tSZ}}$	0.01	—	$10^9 A_s e^{-2\tau}$	1.8613	$1.855 \pm 0.023$	$100\theta_{\text{eq}}$	0.8279	$0.830 \pm 0.011$
$\Omega_\Lambda$	0.6990	$0.701^{+0.013}_{-0.012}$	Age/Gyr	13.836	$13.84 \pm 0.10$	$r_{\text{drag}}/D_V(0.57)$	0.07201	$0.07212 \pm 0.00077$
$\Omega_m$	0.3010	$0.299^{+0.012}_{-0.013}$	$z_*$	1089.62	$1089.51 \pm 0.54$			

Best-fit  $\chi^2_{\text{eff}} = 7559.15$ ; R-1 = 0.00931

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.03 DR7: 0.69 DR9: 0.50 CMB - WMAP: 7557.94



## 5.21 base\_alpha1\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022787	$0.02302 \pm 0.00046$	$\sigma_8$	0.8027	$0.792 \pm 0.022$	$r_*$	146.46	$147.1 \pm 1.1$
$\Omega_c h^2$	0.11108	$0.1082^{+0.0036}_{-0.0042}$	$z_{\text{re}}$	11.28	$10.4 \pm 1.1$	$100\theta_*$	1.04048	$1.0437^{+0.0029}_{-0.0025}$
$100\theta_{\text{MC}}$	1.04038	$1.0436^{+0.0029}_{-0.0025}$	$H_0$	70.80	$73.3^{+2.2}_{-2.0}$	$z_{\text{drag}}$	1060.31	$1060.6 \pm 1.1$
$\tau$	0.0971	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.221	$2.170^{+0.063}_{-0.076}$	$r_{\text{drag}}$	149.03	$149.6 \pm 1.2$
$\alpha_{-1}$	0.00000	$0.0037^{+0.0021}_{-0.0044}$	$\Omega_m h^2$	0.13451	$0.1319^{+0.0036}_{-0.0041}$	$k_D$	0.13903	$0.1386 \pm 0.0013$
$n_s$	0.9782	$0.995^{+0.016}_{-0.014}$	$\Omega_m h^3$	0.09523	$0.0965 \pm 0.0019$	$100\theta_D$	0.16053	$0.16085 \pm 0.00055$
$\ln(10^{10} A_s)$	3.1005	$3.077^{+0.030}_{-0.034}$	$Y_P$	0.248016	$0.24811 \pm 0.00019$	$z_{\text{eq}}$	3199	$3135^{+87}_{-98}$
$A_{\text{tSZ}}$	1.19	—	$10^9 A_s e^{-2\tau}$	1.8290	$1.816 \pm 0.028$	$100\theta_{\text{eq}}$	0.8525	$0.869 \pm 0.019$
$\Omega_\Lambda$	0.7316	$0.753^{+0.023}_{-0.017}$	Age/Gyr	13.728	$13.59^{+0.11}_{-0.12}$	$r_{\text{drag}}/D_V(0.57)$	0.07416	$0.0761 \pm 0.0017$
$\Omega_m$	0.2684	$0.247^{+0.017}_{-0.023}$	$z_*$	1088.72	$1088.21 \pm 0.66$			

Best-fit  $\chi^2_{\text{eff}} = 7560.21$ ; R-1 = 0.00595

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.58 Hubble - HST: 1.63

## 5.22 base\_alpha1\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02266	$0.02300 \pm 0.00052$	$\sigma_8$	0.8056	$0.790 \pm 0.023$	$r_*$	146.25	$147.1 \pm 1.2$
$\Omega_c h^2$	0.11223	$0.1081^{+0.0044}_{-0.0051}$	$z_{\text{re}}$	11.24	$10.5 \pm 1.1$	$100\theta_*$	1.04002	$1.0434^{+0.0037}_{-0.0030}$
$100\theta_{\text{MC}}$	1.03991	$1.0434^{+0.0037}_{-0.0030}$	$H_0$	70.09	$73.2^{+3.1}_{-2.6}$	$z_{\text{drag}}$	1060.12	$1060.6 \pm 1.1$
$\tau$	0.0958	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.220	$2.171^{+0.064}_{-0.078}$	$r_{\text{drag}}$	148.86	$149.6 \pm 1.2$
$\alpha_{-1}$	-0.00001	$0.0038^{+0.0026}_{-0.0051}$	$\Omega_m h^2$	0.13553	$0.1318^{+0.0043}_{-0.0049}$	$k_D$	0.13912	$0.1385 \pm 0.0014$
$n_s$	0.9736	$0.994^{+0.021}_{-0.017}$	$\Omega_m h^3$	0.09500	$0.0964 \pm 0.0021$	$100\theta_D$	0.16058	$0.16084 \pm 0.00056$
$\ln(10^{10} A_s)$	3.1003	$3.077^{+0.031}_{-0.035}$	$Y_P$	0.247962	$0.24810 \pm 0.00022$	$z_{\text{eq}}$	3223	$3134^{+100}_{-120}$
$A_{\text{tSZ}}$	1.31	—	$10^9 A_s e^{-2\tau}$	1.8331	$1.816 \pm 0.030$	$100\theta_{\text{eq}}$	0.8469	$0.870 \pm 0.024$
$\Omega_\Lambda$	0.7241	$0.752^{+0.032}_{-0.021}$	Age/Gyr	13.761	$13.60^{+0.14}_{-0.17}$	$r_{\text{drag}}/D_V(0.57)$	0.07363	$0.0761^{+0.0024}_{-0.0021}$
$\Omega_m$	0.2759	$0.248^{+0.021}_{-0.032}$	$z_*$	1088.98	$1088.23 \pm 0.84$			

Best-fit  $\chi^2_{\text{eff}} = 7985.25$ ; R-1 = 0.00675

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.41 SN - SNLS: 426.84

### 5.23 base\_alpha1\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02263	$0.02274 \pm 0.00054$	$\sigma_8$	0.8159	$0.803 \pm 0.024$	$r_*$	145.62	$146.2 \pm 1.3$
$\Omega_c h^2$	0.1146	$0.1121 \pm 0.0054$	$z_{\text{re}}$	10.93	$10.6 \pm 1.2$	$100\theta_*$	1.04026	$1.0413^{+0.0043}_{-0.0038}$
$100\theta_{\text{MC}}$	1.04015	$1.0412^{+0.0043}_{-0.0038}$	$H_0$	69.25	$70.7 \pm 3.2$	$z_{\text{drag}}$	1060.24	$1060.3 \pm 1.1$
$\tau$	0.0912	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.226	$2.195^{+0.068}_{-0.081}$	$r_{\text{drag}}$	148.23	$148.8 \pm 1.3$
$\alpha_{-1}$	-0.00001	$0.0013^{+0.0029}_{-0.0042}$	$\Omega_m h^2$	0.1379	$0.1355 \pm 0.0052$	$k_D$	0.13976	$0.1392 \pm 0.0014$
$n_s$	0.9734	$0.980^{+0.024}_{-0.022}$	$\Omega_m h^3$	0.09550	$0.0957 \pm 0.0022$	$100\theta_D$	0.16057	$0.16069 \pm 0.00058$
$\ln(10^{10} A_s)$	3.1026	$3.088^{+0.032}_{-0.036}$	$Y_P$	0.247950	$0.24800 \pm 0.00023$	$z_{\text{eq}}$	3280	$3223 \pm 120$
$A_{\text{tSZ}}$	0.19	—	$10^9 A_s e^{-2\tau}$	1.8545	$1.836 \pm 0.033$	$100\theta_{\text{eq}}$	0.8359	$0.849 \pm 0.027$
$\Omega_\Lambda$	0.7124	$0.726^{+0.042}_{-0.030}$	Age/Gyr	13.769	$13.71 \pm 0.17$	$r_{\text{drag}}/D_V(0.57)$	0.07288	$0.0741 \pm 0.0025$
$\Omega_m$	0.2876	$0.274^{+0.030}_{-0.042}$	$z_*$	1089.23	$1088.88 \pm 0.96$			

Best-fit  $\chi^2_{\text{eff}} = 7687.85$ ; R-1 = 0.00466

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.90 SN - Union2.1: 129.95

## 6 mnu

### 6.1 base\_mnu\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022058	$0.02190 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.613	$0.54^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8442	$1.838 \pm 0.013$
$\Omega_c h^2$	0.12076	$0.1209 \pm 0.0028$	$c_{100}$	1.000582	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00024	$< 0.00433$
$100\theta_{\text{MC}}$	1.04106	$1.04103 \pm 0.00070$	$c_{217}$	0.99645	$0.9965 \pm 0.0014$	Age/Gyr	13.805	$13.97^{+0.10}_{-0.23}$
$\tau$	0.0914	$0.089^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.43	—	$z_*$	1090.48	$1090.78^{+0.61}_{-0.75}$
$\Sigma m_\nu$	0.022	$< 0.403$	$A^{\text{kSZ}}$	1.31	—	$r_*$	144.47	$144.46 \pm 0.66$
$n_s$	0.9613	$0.9566^{+0.0090}_{-0.0081}$	$\beta_1^1$	0.73	$0.55 \pm 0.57$	$100\theta_*$	1.04120	$1.04132 \pm 0.00065$
$\ln(10^{10} A_s)$	3.0973	$3.090 \pm 0.025$	$\Omega_\Lambda$	0.6839	$0.645^{+0.062}_{-0.024}$	$z_{\text{drag}}$	1059.32	$1059.03 \pm 0.62$
$A_{100}^{\text{PS}}$	149	$175 \pm 60$	$\Omega_m$	0.3161	$0.355^{+0.024}_{-0.062}$	$r_{\text{drag}}$	147.24	$147.28 \pm 0.64$
$A_{143}^{\text{PS}}$	62.7	$55 \pm 10$	$\sigma_8$	0.845	$0.775^{+0.077}_{-0.032}$	$k_D$	0.14036	$0.14025 \pm 0.00067$
$A_{217}^{\text{PS}}$	117.3	$106^{+20}_{-20}$	$z_{\text{re}}$	11.26	$11.2 \pm 1.1$	$100\theta_D$	0.161310	$0.16147 \pm 0.00034$
$A_{143}^{\text{CIB}}$	0.0	$< 11.3$	$H_0$	67.27	$64.5^{+4.1}_{-2.0}$	$z_{\text{eq}}$	3413	$3411 \pm 63$
$A_{217}^{\text{CIB}}$	26.3	$30^{+6}_{-9}$	$10^9 A_s$	2.214	$2.198^{+0.052}_{-0.059}$	$100\theta_{\text{eq}}$	0.8107	$0.811 \pm 0.012$
$A_{143}^{\text{tSZ}}$	5.84	—	$\Omega_m h^2$	0.14305	$0.1463^{+0.0034}_{-0.0059}$	$r_{\text{drag}}/D_V(0.57)$	0.07137	$0.0697^{+0.0027}_{-0.0014}$
$r_{143 \times 217}^{\text{PS}}$	0.987	$> 0.848$	$\Omega_m h^3$	0.09623	$0.0942^{+0.0025}_{-0.0011}$			
$r_{143 \times 217}^{\text{CIB}}$	0.534	$0.45 \pm 0.22$	$Y_P$	0.247706	$0.24763 \pm 0.00014$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.94$ ; R-1 = 0.00931

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.38 lowl: -6.46 CamSpec: 7797.84

## 6.2 base\_mnu\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022148	$0.02213 \pm 0.00025$	$\gamma^{\text{CIB}}$	0.527	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8374	$1.830 \pm 0.010$
$\Omega_c h^2$	0.11931	$0.1185 \pm 0.0018$	$c_{100}$	1.000585	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00002	$< 0.00125$
$100\theta_{\text{MC}}$	1.04143	$1.04148 \pm 0.00057$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.773	$13.812^{+0.046}_{-0.056}$
$\tau$	0.0937	$0.092 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.237	$1090.21 \pm 0.41$
$\Sigma m_\nu$	0.002	$< 0.116$	$A^{\text{kSZ}}$	0.4	—	$r_*$	144.775	$144.99 \pm 0.45$
$n_s$	0.9650	$0.9631 \pm 0.0059$	$\beta_1^1$	0.68	$0.50 \pm 0.56$	$100\theta_*$	1.04155	$1.04166 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0983	$3.091 \pm 0.025$	$\Omega_\Lambda$	0.6949	$0.690^{+0.013}_{-0.011}$	$z_{\text{drag}}$	1059.44	$1059.34 \pm 0.56$
$A_{100}^{\text{PS}}$	148	$170 \pm 60$	$\Omega_m$	0.3051	$0.310^{+0.011}_{-0.013}$	$r_{\text{drag}}$	147.520	$147.74 \pm 0.47$
$A_{143}^{\text{PS}}$	64.2	$53 \pm 10$	$\sigma_8$	0.8452	$0.819^{+0.027}_{-0.016}$	$k_D$	0.14014	$0.13989 \pm 0.00057$
$A_{217}^{\text{PS}}$	123.6	$106^{+20}_{-20}$	$z_{\text{re}}$	11.40	$11.2 \pm 1.1$	$100\theta_D$	0.161280	$0.16135 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$H_0$	68.10	$67.62^{+0.96}_{-0.86}$	$z_{\text{eq}}$	3380.2	$3361 \pm 42$
$A_{217}^{\text{CIB}}$	23.6	$29^{+6}_{-9}$	$10^9 A_s$	2.216	$2.200^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8170	$0.8206 \pm 0.0080$
$A_{143}^{\text{tSZ}}$	6.31	—	$\Omega_m h^2$	0.14148	$0.1417 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07198	$0.07176 \pm 0.00064$
$r_{143 \times 217}^{\text{PS}}$	0.904	$> 0.849$	$\Omega_m h^3$	0.09634	$0.09579^{+0.00082}_{-0.00068}$			
$r_{143 \times 217}^{\text{CIB}}$	0.612	$0.43 \pm 0.22$	$Y_P$	0.247745	$0.24774 \pm 0.00011$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.45$ ; R-1 = 0.01661

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.46 DR7: 0.81 6DF: 0.03 CMB - lowLike: 2014.39 lowl: -7.12 CamSpec: 7797.13

### 6.3 base\_mnu\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022325	$0.02227 \pm 0.00029$	$\gamma^{\text{CIB}}$	0.531	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8282	$1.824 \pm 0.012$
$\Omega_c h^2$	0.11730	$0.1171 \pm 0.0024$	$c_{100}$	1.000597	$1.00059 \pm 0.00039$	$\Omega_\nu h^2$	0.000003	$< 0.000883$
$100\theta_{\text{MC}}$	1.04173	$1.04175 \pm 0.00062$	$c_{217}$	0.99630	$0.9963 \pm 0.0014$	Age/Gyr	13.736	$13.770^{+0.053}_{-0.063}$
$\tau$	0.0965	$0.094 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.83	$1089.89 \pm 0.51$
$\Sigma m_\nu$	0.0002	$< 0.0821$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.16	$145.25 \pm 0.56$
$n_s$	0.9693	$0.9668 \pm 0.0071$	$\beta_1^1$	0.63	$0.47 \pm 0.55$	$100\theta_*$	1.04184	$1.04190 \pm 0.00061$
$\ln(10^{10} A_s)$	3.0988	$3.093 \pm 0.026$	$\Omega_\Lambda$	0.7074	$0.701 \pm 0.016$	$z_{\text{drag}}$	1059.70	$1059.57 \pm 0.60$
$A_{100}^{\text{PS}}$	135	$169 \pm 60$	$\Omega_m$	0.2926	$0.299 \pm 0.016$	$r_{\text{drag}}$	147.86	$147.97 \pm 0.56$
$A_{143}^{\text{PS}}$	57.4	$52 \pm 10$	$\sigma_8$	0.8392	$0.821^{+0.022}_{-0.014}$	$k_D$	0.13992	$0.13976 \pm 0.00062$
$A_{217}^{\text{PS}}$	121.2	$105^{+20}_{-20}$	$z_{\text{re}}$	11.52	$11.3 \pm 1.1$	$100\theta_D$	0.161146	$0.16124 \pm 0.00034$
$A_{143}^{\text{CIB}}$	1.15	$< 10.8$	$H_0$	69.07	$68.6 \pm 1.3$	$z_{\text{eq}}$	3336	$3331 \pm 55$
$A_{217}^{\text{CIB}}$	24.7	$29^{+6}_{-9}$	$10^9 A_s$	2.217	$2.204 \pm 0.056$	$100\theta_{\text{eq}}$	0.8257	$0.827 \pm 0.011$
$A^{\text{tSZ}}_{143}$	7.93	—	$\Omega_m h^2$	0.13963	$0.1401 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07271	$0.07244 \pm 0.00094$
$r_{143 \times 217}^{\text{PS}}$	0.895	$> 0.848$	$\Omega_m h^3$	0.09645	$0.09605^{+0.00076}_{-0.00063}$			
$r_{143 \times 217}^{\text{CIB}}$	0.226	$0.43 \pm 0.23$	$Y_P$	0.247820	$0.24780 \pm 0.00012$			

Best-fit  $\chi^2_{\text{eff}} = 9809.89$ ; R-1 = 0.02562

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.41 lowl: -7.75 CamSpec: 7798.62 Hubble - HST: 3.90

## 6.4 base\_mnu\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022216	$0.02216 \pm 0.00029$	$\gamma^{\text{CIB}}$	0.542	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8335	$1.828 \pm 0.012$
$\Omega_c h^2$	0.11834	$0.1181 \pm 0.0025$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00124$
$100\theta_{\text{MC}}$	1.04155	$1.04154 \pm 0.00063$	$c_{217}$	0.99649	$0.9964 \pm 0.0014$	Age/Gyr	13.758	$13.807^{+0.057}_{-0.079}$
$\tau$	0.0946	$0.093 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.26	—	$z_*$	1090.07	$1090.13 \pm 0.52$
$\Sigma m_\nu$	0.000	$< 0.115$	$A^{\text{kSZ}}$	1.13	—	$r_*$	144.98	$145.07 \pm 0.56$
$n_s$	0.9666	$0.9641 \pm 0.0072$	$\beta_1^1$	0.63	$0.49 \pm 0.56$	$100\theta_*$	1.04166	$1.04171 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0981	$3.091 \pm 0.025$	$\Omega_\Lambda$	0.7008	$0.692^{+0.020}_{-0.016}$	$z_{\text{drag}}$	1059.55	$1059.39 \pm 0.59$
$A_{100}^{\text{PS}}$	160	$170 \pm 60$	$\Omega_m$	0.2992	$0.308^{+0.016}_{-0.020}$	$r_{\text{drag}}$	147.70	$147.82 \pm 0.56$
$A_{143}^{\text{PS}}$	66.8	$53 \pm 10$	$\sigma_8$	0.8421	$0.817^{+0.028}_{-0.015}$	$k_D$	0.14000	$0.13984 \pm 0.00062$
$A_{217}^{\text{PS}}$	119.3	$106^{+20}_{-20}$	$z_{\text{re}}$	11.43	$11.3 \pm 1.1$	$100\theta_D$	0.161234	$0.16132 \pm 0.00034$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$H_0$	68.54	$67.8^{+1.5}_{-1.3}$	$z_{\text{eq}}$	3359	$3352 \pm 56$
$A_{217}^{\text{CIB}}$	24.8	$29^{+6}_{-9}$	$10^9 A_s$	2.216	$2.201^{+0.053}_{-0.060}$	$100\theta_{\text{eq}}$	0.8212	$0.823 \pm 0.011$
$A_{143}^{\text{tSZ}}$	4.85	—	$\Omega_m h^2$	0.14056	$0.1413 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07232	$0.0719 \pm 0.0010$
$r_{143 \times 217}^{\text{PS}}$	0.902	$> 0.849$	$\Omega_m h^3$	0.09634	$0.09577^{+0.00093}_{-0.00067}$			
$r_{143 \times 217}^{\text{CIB}}$	0.481	$0.43 \pm 0.22$	$Y_P$	0.247774	$0.24775 \pm 0.00012$			

Best-fit  $\chi^2_{\text{eff}} = 10234.07$ ; R-1 = 0.01328

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.36 lowl: -7.37 CamSpec: 7797.97 SN - SNLS: 428.47

## 6.5 base\_mnu\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022171	$0.02205 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.537	$0.54 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8354	$1.833 \pm 0.012$
$\Omega_c h^2$	0.11891	$0.1194 \pm 0.0025$	$c_{100}$	1.000600	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00190$
$100\theta_{\text{MC}}$	1.04147	$1.04133 \pm 0.00064$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.767	$13.856^{+0.061}_{-0.11}$
$\tau$	0.0942	$0.091 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.17	$1090.39 \pm 0.53$
$\Sigma m_\nu$	0.000	$< 0.177$	$A^{\text{kSZ}}$	1.02	—	$r_*$	144.86	$144.80 \pm 0.57$
$n_s$	0.9657	$0.9610 \pm 0.0072$	$\beta_1^1$	0.65	$0.52 \pm 0.57$	$100\theta_*$	1.04158	$1.04153 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0982	$3.090 \pm 0.025$	$\Omega_\Lambda$	0.6973	$0.677^{+0.028}_{-0.017}$	$z_{\text{drag}}$	1059.47	$1059.24 \pm 0.58$
$A_{100}^{\text{PS}}$	145	$172 \pm 60$	$\Omega_m$	0.3027	$0.323^{+0.017}_{-0.028}$	$r_{\text{drag}}$	147.60	$147.58 \pm 0.57$
$A_{143}^{\text{PS}}$	62.9	$54 \pm 10$	$\sigma_8$	0.8440	$0.808^{+0.039}_{-0.017}$	$k_D$	0.14007	$0.14001 \pm 0.00062$
$A_{217}^{\text{PS}}$	121.7	$106^{+20}_{-20}$	$z_{\text{re}}$	11.42	$11.2 \pm 1.1$	$100\theta_D$	0.161267	$0.16139 \pm 0.00034$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$H_0$	68.27	$66.7^{+2.0}_{-1.4}$	$z_{\text{eq}}$	3371	$3380 \pm 57$
$A_{217}^{\text{CIB}}$	23.9	$29^{+6}_{-9}$	$10^9 A_s$	2.216	$2.199^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8187	$0.817 \pm 0.011$
$A_{143}^{\text{tSZ}}$	6.32	—	$\Omega_m h^2$	0.14109	$0.1431^{+0.0026}_{-0.0032}$	$r_{\text{drag}}/D_V(0.57)$	0.07212	$0.0711^{+0.0014}_{-0.0010}$
$r_{143 \times 217}^{\text{PS}}$	0.906	$> 0.849$	$\Omega_m h^3$	0.09632	$0.0954^{+0.0013}_{-0.00071}$			
$r_{143 \times 217}^{\text{CIB}}$	0.630	$0.43 \pm 0.22$	$Y_P$	0.247754	$0.24770 \pm 0.00012$			

Best-fit  $\chi_{\text{eff}}^2 = 9935.44$ ; R-1 = 0.00855

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.38 lowl: -7.25 CamSpec: 7797.43 SN - Union2.1: 130.22



## 6.6 base\_mnu\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022100	$0.02200 \pm 0.00029$	$\beta_1^1$	0.45	$0.41 \pm 0.55$	$\sigma_8$	0.8425	$0.797^{+0.053}_{-0.020}$
$\Omega_c h^2$	0.11977	$0.1204 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.51 \pm 0.60$	$z_{\text{re}}$	11.58	$11.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.04138	$1.04115 \pm 0.00067$	$A_{218}^{\text{PS, ACT}}$	75.59	$76.8 \pm 4.5$	$H_0$	67.75	$65.7^{+2.9}_{-1.5}$
$\tau$	0.0955	$0.091^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.22	$7.59^{+1.4}_{-1.6}$	$10^9 A_s$	2.219	$2.201^{+0.051}_{-0.061}$
$\Sigma m_\nu$	0.023	$< 0.243$	$A_{150}^{\text{PS, SPT}}$	9.73	$10.03 \pm 0.52$	$\Omega_m h^2$	0.14211	$0.1447^{+0.0029}_{-0.0044}$
$n_s$	0.9594	$0.9566 \pm 0.0074$	$A_{220}^{\text{PS, SPT}}$	72.52	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09628	$0.0950^{+0.0017}_{-0.00073}$
$\ln(10^{10} A_s)$	3.0998	$3.091^{+0.024}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.814	$0.833 \pm 0.090$	$Y_P$	0.247724	$0.24768 \pm 0.00013$
$A_{100}^{\text{PS}}$	204	$215 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.564	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8336	$1.834 \pm 0.013$
$A_{143}^{\text{PS}}$	72.7	$73.9 \pm 8.2$	$r_{150 \times 220}^{\text{PS}}$	0.9077	$0.937 \pm 0.023$	$\Omega_\nu h^2$	0.00024	$< 0.00261$
$A_{217}^{\text{PS}}$	59.6	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.421	$0.44 \pm 0.19$	Age/Gyr	13.788	$13.902^{+0.065}_{-0.16}$
$A_{143}^{\text{CIB}}$	3.43	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.837	$0.85 \pm 0.20$	$z_*$	1090.34	$1090.57^{+0.54}_{-0.63}$
$A_{217}^{\text{CIB}}$	53.5	$49.4 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9916 \pm 0.0073$	$r_*$	144.69	$144.57 \pm 0.62$
$A_{143}^{\text{tSZ}}$	4.93	$2.46^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0029	$1.005 \pm 0.013$	$100\theta_*$	1.04150	$1.04139 \pm 0.00064$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.822 \pm 0.070$	$y_{148}^{\text{ACTe}}$	0.9874	$0.9879 \pm 0.0072$	$z_{\text{drag}}$	1059.36	$1059.19 \pm 0.57$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9611	$0.963 \pm 0.010$	$r_{\text{drag}}$	147.45	$147.36 \pm 0.61$
$\gamma^{\text{CIB}}$	0.670	$0.634 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9844	$0.983 \pm 0.019$	$k_D$	0.14017	$0.14021 \pm 0.00064$
$c_{100}$	1.000587	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9844	$0.9865 \pm 0.0096$	$100\theta_D$	0.161327	$0.16140 \pm 0.00032$
$c_{217}$	0.99731	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0179	$1.024^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3390	$3402 \pm 61$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.435$	$\Omega_\Lambda$	0.6904	$0.663^{+0.042}_{-0.018}$	$100\theta_{\text{eq}}$	0.8150	$0.813 \pm 0.011$
$A^{\text{kSZ}}$	1.21	$5.57^{+2.8}_{-1.9}$	$\Omega_m$	0.3096	$0.337^{+0.018}_{-0.042}$	$r_{\text{drag}}/D_V(0.57)$	0.07174	$0.0705^{+0.0019}_{-0.0011}$

Best-fit  $\chi_{\text{eff}}^2 = 10508.94$ ; R-1 =0.00543

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.61 lowl: -5.95 CamSpec: 7807.69 highL: 692.51

## 6.7 base\_mnu\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022138	$0.02214 \pm 0.00024$	$\beta_1^1$	0.41	$0.36 \pm 0.55$	$\sigma_8$	0.8444	$0.820^{+0.025}_{-0.016}$
$\Omega_c h^2$	0.11926	$0.1186 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.53 \pm 0.59$	$z_{\text{re}}$	11.60	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04143	$1.04148 \pm 0.00057$	$A_{218}^{\text{PS, ACT}}$	76.00	$77.0^{+4.8}_{-4.4}$	$H_0$	68.11	$67.68 \pm 0.88$
$\tau$	0.0961	$0.093^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.29	$7.65^{+1.3}_{-1.7}$	$10^9 A_s$	2.220	$2.201^{+0.052}_{-0.063}$
$\Sigma m_\nu$	0.000	$< 0.107$	$A_{150}^{\text{PS, SPT}}$	9.77	$10.08 \pm 0.52$	$\Omega_m h^2$	0.14140	$0.1417 \pm 0.0017$
$n_s$	0.9605	$0.9610 \pm 0.0055$	$A_{220}^{\text{PS, SPT}}$	72.81	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09631	$0.09586^{+0.00079}_{-0.00066}$
$\ln(10^{10} A_s)$	3.0999	$3.091^{+0.024}_{-0.028}$	$r_{95 \times 150}^{\text{PS}}$	0.805	$0.833^{+0.11}_{-0.089}$	$Y_P$	0.247740	$0.24774 \pm 0.00010$
$A_{100}^{\text{PS}}$	203	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.557	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8316	$1.8277 \pm 0.0096$
$A_{143}^{\text{PS}}$	72.1	$72.4 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9094	$0.937 \pm 0.023$	$\Omega_\nu h^2$	0.00000	$< 0.00115$
$A_{217}^{\text{PS}}$	59.9	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	Age/Gyr	13.7731	$13.807^{+0.044}_{-0.054}$
$A_{143}^{\text{CIB}}$	3.34	$3.26 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.839	$0.85 \pm 0.20$	$z_*$	1090.247	$1090.19 \pm 0.39$
$A_{217}^{\text{CIB}}$	52.8	$49.5 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9923 \pm 0.0072$	$r_*$	144.796	$144.96 \pm 0.44$
$A_{143}^{\text{tSZ}}$	4.84	$2.48^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0024	$1.006 \pm 0.014$	$100\theta_*$	1.04156	$1.04165 \pm 0.00056$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.819^{+0.071}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9887 \pm 0.0071$	$z_{\text{drag}}$	1059.40	$1059.39 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9613	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.546	$147.71 \pm 0.47$
$\gamma^{\text{CIB}}$	0.662	$0.636 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9843	$0.984 \pm 0.019$	$k_D$	0.14010	$0.13994 \pm 0.00056$
$c_{100}$	1.000583	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9851	$0.9881 \pm 0.0096$	$100\theta_D$	0.161297	$0.16132 \pm 0.00031$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0167	$1.025^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3378.8	$3362 \pm 42$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.427$	$\Omega_\Lambda$	0.6952	$0.690^{+0.012}_{-0.011}$	$100\theta_{\text{eq}}$	0.8172	$0.8204 \pm 0.0079$
$A^{\text{kSZ}}$	1.42	$5.45^{+2.7}_{-1.9}$	$\Omega_m$	0.3048	$0.310 \pm 0.011$	$r_{\text{drag}}/D_V(0.57)$	0.07200	$0.07179 \pm 0.00063$

Best-fit  $\chi_{\text{eff}}^2 = 10510.03$ ; R-1 = 0.01158

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.78 DR9: 0.48 6DF: 0.03 CMB - lowLike: 2014.59 lowl: -6.16 CamSpec: 7807.77 highL: 692.43

## 6.8 base\_mnu\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022298	$0.02227 \pm 0.00027$	$\beta_1^1$	0.43	$0.35 \pm 0.56$	$\sigma_8$	0.8382	$0.822^{+0.020}_{-0.014}$
$\Omega_c h^2$	0.11742	$0.1172 \pm 0.0023$	$A_{148}^{\text{PS, ACT}}$	10.30	$10.54 \pm 0.60$	$z_{\text{re}}$	11.61	$11.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04175	$1.04174 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	76.16	$77.1 \pm 4.5$	$H_0$	69.01	$68.6 \pm 1.2$
$\tau$	0.0973	$0.095 \pm 0.014$	$A_{95}^{\text{PS, SPT}}$	7.28	$7.66^{+1.3}_{-1.7}$	$10^9 A_s$	2.216	$2.206^{+0.055}_{-0.062}$
$\Sigma m_\nu$	0.0000	$< 0.0760$	$A_{150}^{\text{PS, SPT}}$	9.82	$10.11 \pm 0.52$	$\Omega_m h^2$	0.13972	$0.1402 \pm 0.0023$
$n_s$	0.9647	$0.9645 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	72.85	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09642	$0.09609^{+0.00074}_{-0.00064}$
$\ln(10^{10} A_s)$	3.0984	$3.093 \pm 0.026$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.834 \pm 0.089$	$Y_{\text{P}}$	0.247809	$0.24780 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.558	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8242	$1.822 \pm 0.011$
$A_{143}^{\text{PS}}$	70.7	$71.4 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9105	$0.936 \pm 0.023$	$\Omega_\nu h^2$	0.000000	$< 0.000817$
$A_{217}^{\text{PS}}$	59.1	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	Age/Gyr	13.739	$13.769^{+0.050}_{-0.059}$
$A_{143}^{\text{CIB}}$	3.31	$3.27^{+0.80}_{-0.92}$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.85 \pm 0.20$	$z_*$	1089.882	$1089.90 \pm 0.47$
$A_{217}^{\text{CIB}}$	52.66	$49.6 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9925	$0.9928 \pm 0.0073$	$r_*$	145.15	$145.23 \pm 0.55$
$A_{143}^{\text{tSZ}}$	4.86	$2.53^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.007 \pm 0.013$	$100\theta_*$	1.04185	$1.04188 \pm 0.00060$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.816^{+0.071}_{-0.081}$	$y_{148}^{\text{ACTe}}$	0.9886	$0.9892 \pm 0.0072$	$z_{\text{drag}}$	1059.67	$1059.58 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9618	$0.965 \pm 0.010$	$r_{\text{drag}}$	147.86	$147.94 \pm 0.55$
$\gamma^{\text{CIB}}$	0.663	$0.638 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9859	$0.985 \pm 0.020$	$k_{\text{D}}$	0.13990	$0.13979^{+0.00066}_{-0.00059}$
$c_{100}$	1.000596	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9863	$0.9890 \pm 0.0094$	$100\theta_{\text{D}}$	0.161180	$0.16123 \pm 0.00031$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0167	$1.026^{+0.022}_{-0.026}$	$z_{\text{eq}}$	3339	$3333 \pm 53$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.412$	$\Omega_\Lambda$	0.7066	$0.701^{+0.016}_{-0.014}$	$100\theta_{\text{eq}}$	0.8252	$0.826 \pm 0.010$
$A^{\text{kSZ}}$	1.46	$5.33^{+2.7}_{-1.9}$	$\Omega_m$	0.2934	$0.299^{+0.014}_{-0.016}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07267	$0.07243 \pm 0.00089$

Best-fit  $\chi_{\text{eff}}^2 = 10513.47$ ; R-1 = 0.02705

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.52 lowl: -6.98 CamSpec: 7809.45 highL: 692.39 Hubble - HST: 4.00

## 6.9 base\_mnu\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022199	$0.02218 \pm 0.00027$	$\beta_1^1$	0.35	$0.36 \pm 0.56$	$\sigma_8$	0.8409	$0.819^{+0.025}_{-0.015}$
$\Omega_c h^2$	0.11823	$0.1181 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.30	$10.53 \pm 0.60$	$z_{\text{re}}$	11.61	$11.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04160	$1.04154 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.69	$77.0^{+4.8}_{-4.4}$	$H_0$	68.59	$67.9^{+1.5}_{-1.2}$
$\tau$	0.0968	$0.094^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.19	$7.65^{+1.3}_{-1.7}$	$10^9 A_s$	2.217	$2.203^{+0.053}_{-0.062}$
$\Sigma m_\nu$	0.000	$< 0.103$	$A_{150}^{\text{PS, SPT}}$	9.83	$10.08 \pm 0.52$	$\Omega_m h^2$	0.14043	$0.1413 \pm 0.0025$
$n_s$	0.9628	$0.9622 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	73.27	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09631	$0.09586^{+0.00085}_{-0.00066}$
$\ln(10^{10} A_s)$	3.0987	$3.092^{+0.025}_{-0.028}$	$r_{95 \times 150}^{\text{PS}}$	0.802	$0.834^{+0.11}_{-0.090}$	$Y_P$	0.247767	$0.24776 \pm 0.00011$
$A_{100}^{\text{PS}}$	199	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.562	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8269	$1.826 \pm 0.012$
$A_{143}^{\text{PS}}$	71.8	$72.2 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9116	$0.937 \pm 0.023$	$\Omega_\nu h^2$	0.00000	$< 0.00111$
$A_{217}^{\text{PS}}$	61.2	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.444	$0.43 \pm 0.19$	Age/Gyr	13.758	$13.800^{+0.053}_{-0.073}$
$A_{143}^{\text{CIB}}$	3.26	$3.26 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.854	$0.85 \pm 0.20$	$z_*$	1090.076	$1090.10 \pm 0.48$
$A_{217}^{\text{CIB}}$	51.76	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9924 \pm 0.0072$	$r_*$	145.02	$145.06 \pm 0.56$
$A_{143}^{\text{tSZ}}$	4.68	$2.50^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0027	$1.006 \pm 0.013$	$100\theta_*$	1.04171	$1.04170 \pm 0.00061$
$r_{143 \times 217}^{\text{PS}}$	0.809	$0.818^{+0.070}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9888 \pm 0.0072$	$z_{\text{drag}}$	1059.47	$1059.43 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9614	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.75	$147.80 \pm 0.56$
$\gamma^{\text{CIB}}$	0.650	$0.637 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9838	$0.984 \pm 0.020$	$k_D$	0.13993	$0.13987 \pm 0.00061$
$c_{100}$	1.000573	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9855	$0.9882 \pm 0.0095$	$100\theta_D$	0.161269	$0.16130 \pm 0.00032$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0137	$1.025^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3355	$3352 \pm 54$
$\xi^{\text{tSZ-CIB}}$	0.005	$< 0.421$	$\Omega_\Lambda$	0.7015	$0.693^{+0.020}_{-0.015}$	$100\theta_{\text{eq}}$	0.8217	$0.822 \pm 0.011$
$A^{\text{kSZ}}$	1.71	$5.41^{+2.7}_{-1.9}$	$\Omega_m$	0.2985	$0.307^{+0.015}_{-0.020}$	$r_{\text{drag}}/D_V(0.57)$	0.07237	$0.0719^{+0.0011}_{-0.00093}$

Best-fit  $\chi_{\text{eff}}^2 = 10937.43$ ; R-1 = 0.01436

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.56 lowl: -6.66 CamSpec: 7808.33 highL: 692.61 SN - SNLS: 428.42

## 6.10 base\_mnu\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022072	$0.02209 \pm 0.00027$	$\beta_1^1$	0.47	$0.39 \pm 0.55$	$\sigma_8$	0.8470	$0.813^{+0.033}_{-0.017}$
$\Omega_c h^2$	0.12024	$0.1193 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.53 \pm 0.59$	$z_{\text{re}}$	11.52	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04132	$1.04135 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.08	$76.9^{+4.9}_{-4.4}$	$H_0$	67.67	$67.0^{+1.8}_{-1.3}$
$\tau$	0.0946	$0.092^{+0.012}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.14	$7.63^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.201^{+0.051}_{-0.062}$
$\Sigma m_\nu$	0.000	$< 0.149$	$A_{150}^{\text{PS, SPT}}$	9.76	$10.06 \pm 0.52$	$\Omega_m h^2$	0.14231	$0.1428^{+0.0026}_{-0.0030}$
$n_s$	0.9582	$0.9593 \pm 0.0068$	$A_{220}^{\text{PS, SPT}}$	72.68	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09630	$0.0956^{+0.0011}_{-0.00068}$
$\ln(10^{10} A_s)$	3.0995	$3.091^{+0.024}_{-0.028}$	$r_{95 \times 150}^{\text{PS}}$	0.815	$0.833^{+0.11}_{-0.091}$	$Y_P$	0.247712	$0.24772 \pm 0.00012$
$A_{100}^{\text{PS}}$	203	$214 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.566	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8362	$1.831 \pm 0.012$
$A_{143}^{\text{PS}}$	72.6	$72.9 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9092	$0.937 \pm 0.023$	$\Omega_\nu h^2$	0.00000	$< 0.00160$
$A_{217}^{\text{PS}}$	61.4	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.415	$0.44 \pm 0.19$	Age/Gyr	13.788	$13.839^{+0.056}_{-0.095}$
$A_{143}^{\text{CIB}}$	3.41	$3.25 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.85 \pm 0.20$	$z_*$	1090.417	$1090.33 \pm 0.50$
$A_{217}^{\text{CIB}}$	52.5	$49.5 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9914	$0.9921 \pm 0.0072$	$r_*$	144.59	$144.81 \pm 0.57$
$A_{143}^{\text{tSZ}}$	4.99	$2.48^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0017	$1.006 \pm 0.013$	$100\theta_*$	1.04144	$1.04154 \pm 0.00061$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.820^{+0.070}_{-0.079}$	$y_{148}^{\text{ACTe}}$	0.9876	$0.9884 \pm 0.0072$	$z_{\text{drag}}$	1059.32	$1059.32 \pm 0.55$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9603	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.36	$147.57 \pm 0.57$
$\gamma^{\text{CIB}}$	0.658	$0.636 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9832	$0.984 \pm 0.020$	$k_D$	0.14025	$0.14005 \pm 0.00061$
$c_{100}$	1.000584	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9843	$0.9875 \pm 0.0095$	$100\theta_D$	0.161341	$0.16135 \pm 0.00032$
$c_{217}$	0.99733	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0160	$1.024^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3401	$3379 \pm 56$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.427$	$\Omega_\Lambda$	0.6892	$0.681^{+0.025}_{-0.017}$	$100\theta_{\text{eq}}$	0.8130	$0.817 \pm 0.011$
$A^{\text{kSZ}}$	1.18	$5.47^{+2.7}_{-1.9}$	$\Omega_m$	0.3108	$0.319^{+0.017}_{-0.025}$	$r_{\text{drag}}/D_V(0.57)$	0.07166	$0.0713^{+0.0012}_{-0.0010}$

Best-fit  $\chi_{\text{eff}}^2 = 10639.32$ ; R-1 = 0.00864

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.55 lowl: -5.65 CamSpec: 7807.06 highL: 692.84 SN - Union2.1: 130.43

## 6.11 base\_mnu\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022118	$0.02191 \pm 0.00036$	$\gamma^{\text{CIB}}$	0.548	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8386	$1.833 \pm 0.015$
$\Omega_c h^2$	0.11968	$0.1203 \pm 0.0032$	$c_{100}$	1.000595	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00008	$< 0.00718$
$100\theta_{\text{MC}}$	1.04143	$1.04102 \pm 0.00073$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.779	$14.05^{+0.17}_{-0.28}$
$\tau$	0.0934	$0.114 \pm 0.041$	$\xi^{\text{tSZ-CIB}}$	0.14	—	$z_*$	1090.31	$1090.79 \pm 0.78$
$\Sigma m_\nu$	0.007	$< 0.668$	$A^{\text{kSZ}}$	1.00	—	$r_*$	144.70	$144.50 \pm 0.74$
$n_s$	0.9639	$0.959 \pm 0.010$	$\beta_1^1$	0.67	$0.53 \pm 0.57$	$100\theta_*$	1.04155	$1.04137 \pm 0.00068$
$\ln(10^{10} A_s)$	3.098	$3.137 \pm 0.078$	$\Omega_\Lambda$	0.692	$0.626^{+0.077}_{-0.040}$	$z_{\text{drag}}$	1059.40	$1059.06 \pm 0.66$
$A_{100}^{\text{PS}}$	143	$171 \pm 60$	$\Omega_m$	0.308	$0.374^{+0.040}_{-0.077}$	$r_{\text{drag}}$	147.46	$147.31 \pm 0.70$
$A_{143}^{\text{PS}}$	62.5	$55 \pm 10$	$\sigma_8$	0.846	$0.756^{+0.088}_{-0.062}$	$k_D$	0.14018	$0.14028 \pm 0.00071$
$A_{217}^{\text{PS}}$	121.8	$107^{+20}_{-10}$	$z_{\text{re}}$	11.39	$13.1^{+4.0}_{-3.0}$	$100\theta_D$	0.161310	$0.16140 \pm 0.00038$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	67.92	$63.3^{+4.7}_{-3.3}$	$z_{\text{eq}}$	3388	$3398 \pm 72$
$A_{217}^{\text{CIB}}$	24.3	$29^{+6}_{-9}$	$10^9 A_s$	2.216	$2.31 \pm 0.18$	$100\theta_{\text{eq}}$	0.8154	$0.814 \pm 0.014$
$A_{143}^{\text{tSZ}}$	6.66	—	$\Omega_m h^2$	0.1419	$0.1476^{+0.0047}_{-0.0067}$	$r_{\text{drag}}/D_V(0.57)$	0.07185	$0.0690^{+0.0029}_{-0.0022}$
$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.850$	$\Omega_m h^3$	0.09636	$0.0933^{+0.0031}_{-0.0018}$			
$r_{143 \times 217}^{\text{CIB}}$	0.599	$0.43 \pm 0.23$	$Y_P$	0.247732	$0.24764 \pm 0.00016$			

Best-fit  $\chi_{\text{eff}}^2 = 7790.85$ ; R-1 = 0.00768

$\chi_{\text{eff}}^2$ : CMB - lowl: -6.90 CamSpec: 7797.18

## 6.12 base\_mnu\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021721	$0.02186 \pm 0.00035$	$\gamma^{\text{CIB}}$	0.532	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8455	$1.829 \pm 0.016$
$\Omega_c h^2$	0.12286	$0.1201 \pm 0.0033$	$c_{100}$	1.000578	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00717	$0.0090^{+0.0045}_{-0.0039}$
$100\theta_{\text{MC}}$	1.04057	$1.04088 \pm 0.00072$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	Age/Gyr	14.176	$14.21^{+0.23}_{-0.16}$
$\tau$	0.0939	$0.136 \pm 0.036$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.29	$1090.98 \pm 0.79$
$\Sigma m_\nu$	0.667	$0.84^{+0.42}_{-0.36}$	$A^{\text{kSZ}}$	0.2	—	$r_*$	143.94	$144.35 \pm 0.78$
$n_s$	0.9525	$0.958 \pm 0.011$	$\beta_1^1$	0.71	$0.51 \pm 0.57$	$100\theta_*$	1.04101	$1.04133 \pm 0.00067$
$\ln(10^{10} A_s)$	3.103	$3.178^{+0.071}_{-0.063}$	$\Omega_\Lambda$	0.589	$0.584 \pm 0.062$	$z_{\text{drag}}$	1058.83	$1059.06 \pm 0.63$
$A_{100}^{\text{PS}}$	158	$167 \pm 60$	$\Omega_m$	0.411	$0.416 \pm 0.062$	$r_{\text{drag}}$	146.80	$147.18 \pm 0.74$
$A_{143}^{\text{PS}}$	52.0	$54 \pm 10$	$\sigma_8$	0.712	$0.705^{+0.047}_{-0.067}$	$k_D$	0.14070	$0.14051 \pm 0.00075$
$A_{217}^{\text{PS}}$	114.2	$107^{+20}_{-10}$	$z_{\text{re}}$	11.81	$15.1^{+3.3}_{-2.4}$	$100\theta_D$	0.161490	$0.16130 \pm 0.00037$
$A_{143}^{\text{CIB}}$	6.63	$< 10.2$	$H_0$	60.73	$60.7^{+2.9}_{-4.1}$	$z_{\text{eq}}$	3455	$3392 \pm 73$
$A_{217}^{\text{CIB}}$	30.2	$29^{+6}_{-9}$	$10^9 A_s$	2.227	$2.40 \pm 0.16$	$100\theta_{\text{eq}}$	0.8033	$0.816 \pm 0.014$
$A_{143}^{\text{tSZ}}$	8.33	—	$\Omega_m h^2$	0.1517	$0.1510^{+0.0059}_{-0.0054}$	$r_{\text{drag}}/D_V(0.57)$	0.06721	$0.0673^{+0.0018}_{-0.0027}$
$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.852$	$\Omega_m h^3$	0.09215	$0.0914^{+0.0018}_{-0.0026}$			
$r_{143 \times 217}^{\text{CIB}}$	0.486	$0.43^{+0.23}_{-0.28}$	$Y_P$	0.247560	$0.24762 \pm 0.00015$			

Best-fit  $\chi_{\text{eff}}^2 = 7800.88$ ; R-1 = 0.01737

$\chi_{\text{eff}}^2$ : CMB - lensing: 7.16 lowl: -6.26 CamSpec: 7799.27

### 6.13 base\_mnu\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022155	$0.02220 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.535	$0.53 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8357	$1.826 \pm 0.012$
$\Omega_c h^2$	0.11920	$0.1178 \pm 0.0021$	$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00170$
$100\theta_{\text{MC}}$	1.04141	$1.04154 \pm 0.00059$	$c_{217}$	0.99631	$0.9964 \pm 0.0014$	Age/Gyr	13.772	$13.817^{+0.049}_{-0.064}$
$\tau$	0.0959	$0.115 \pm 0.037$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.218	$1090.05 \pm 0.47$
$\Sigma m_\nu$	0.000	$< 0.158$	$A^{\text{ksZ}}$	0.00	$< 5.98$	$r_*$	144.798	$145.12 \pm 0.48$
$n_s$	0.9651	$0.9668 \pm 0.0076$	$\beta_1^1$	0.64	$0.48 \pm 0.56$	$100\theta_*$	1.04154	$1.04172 \pm 0.00059$
$\ln(10^{10} A_s)$	3.102	$3.135 \pm 0.071$	$\Omega_\Lambda$	0.6956	$0.691^{+0.013}_{-0.011}$	$z_{\text{drag}}$	1059.44	$1059.46 \pm 0.60$
$A_{100}^{\text{PS}}$	142	$164 \pm 60$	$\Omega_m$	0.3044	$0.309^{+0.011}_{-0.013}$	$r_{\text{drag}}$	147.54	$147.86 \pm 0.50$
$A_{143}^{\text{PS}}$	59.2	$52 \pm 10$	$\sigma_8$	0.8463	$0.828^{+0.034}_{-0.028}$	$k_D$	0.14012	$0.13983 \pm 0.00058$
$A_{217}^{\text{PS}}$	122.0	$107^{+20}_{-10}$	$z_{\text{re}}$	11.58	$13.0^{+3.3}_{-2.7}$	$100\theta_D$	0.161272	$0.16127 \pm 0.00035$
$A_{143}^{\text{CIB}}$	1.46	$< 9.93$	$H_0$	68.14	$67.67 \pm 0.97$	$z_{\text{eq}}$	3377.7	$3344 \pm 48$
$A_{217}^{\text{CIB}}$	24.9	$28^{+6}_{-9}$	$10^9 A_s$	2.224	$2.30^{+0.16}_{-0.18}$	$100\theta_{\text{eq}}$	0.8174	$0.8240 \pm 0.0093$
$A_{143}^{\text{tSZ}}$	7.40	—	$\Omega_m h^2$	0.14136	$0.1413^{+0.0016}_{-0.0019}$	$r_{\text{drag}}/D_V(0.57)$	0.07202	$0.07182 \pm 0.00067$
$r_{143 \times 217}^{\text{PS}}$	0.893	$> 0.852$	$\Omega_m h^3$	0.09632	$0.09563^{+0.00097}_{-0.00072}$			
$r_{143 \times 217}^{\text{CIB}}$	0.188	$0.41^{+0.22}_{-0.27}$	$Y_P$	0.247748	$0.24777 \pm 0.00012$			

Best-fit  $\chi_{\text{eff}}^2 = 7791.94$ ; R-1 = 0.01769

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.75 6DF: 0.04 DR9: 0.50 CMB - lowl: -7.05 CamSpec: 7797.03



## 6.14 base\_mnu\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022273	$0.02239^{+0.00030}_{-0.00034}$	$\gamma^{\text{CIB}}$	0.529	$0.52^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8301	$1.818^{+0.015}_{-0.013}$
$\Omega_c h^2$	0.11761	$0.1159 \pm 0.0026$	$c_{100}$	1.000607	$1.00060 \pm 0.00041$	$\Omega_\nu h^2$	0.00000	$< 0.00107$
$100\theta_{\text{MC}}$	1.04166	$1.04188 \pm 0.00066$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	Age/Gyr	13.745	$13.757^{+0.060}_{-0.069}$
$\tau$	0.0961	$0.128^{+0.042}_{-0.035}$	$\xi^{\text{tSZ-CIB}}$	0.14	—	$z_*$	1089.93	$1089.65 \pm 0.56$
$\Sigma m_\nu$	0.0001	$< 0.0995$	$A^{\text{kSZ}}$	0.68	$< 5.81$	$r_*$	145.12	$145.47^{+0.57}_{-0.65}$
$n_s$	0.9688	$0.9722 \pm 0.0088$	$\beta_1^1$	0.62	$0.44 \pm 0.56$	$100\theta_*$	1.04177	$1.04203 \pm 0.00065$
$\ln(10^{10} A_s)$	3.099	$3.157^{+0.078}_{-0.067}$	$\Omega_\Lambda$	0.7053	$0.707 \pm 0.017$	$z_{\text{drag}}$	1059.63	$1059.76^{+0.61}_{-0.70}$
$A_{100}^{\text{PS}}$	146	$160 \pm 60$	$\Omega_m$	0.2947	$0.293 \pm 0.017$	$r_{\text{drag}}$	147.83	$148.15 \pm 0.59$
$A_{143}^{\text{PS}}$	63.5	$50 \pm 10$	$\sigma_8$	0.8405	$0.841 \pm 0.029$	$k_D$	0.13990	$0.13966 \pm 0.00064$
$A_{217}^{\text{PS}}$	121.6	$107^{+20}_{-10}$	$z_{\text{re}}$	11.52	$13.9^{+3.4}_{-2.3}$	$100\theta_D$	0.161195	$0.16113 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.00	$< 9.65$	$H_0$	68.89	$69.0 \pm 1.4$	$z_{\text{eq}}$	3342	$3305 \pm 59$
$A_{217}^{\text{CIB}}$	23.9	$27^{+6}_{-8}$	$10^9 A_s$	2.218	$2.36 \pm 0.16$	$100\theta_{\text{eq}}$	0.8244	$0.832^{+0.011}_{-0.013}$
$A_{143}^{\text{tSZ}}$	6.09	—	$\Omega_m h^2$	0.13988	$0.1393 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07259	$0.0728 \pm 0.0010$
$r_{143 \times 217}^{\text{PS}}$	0.897	$> 0.852$	$\Omega_m h^3$	0.09637	$0.09603^{+0.00081}_{-0.00066}$			
$r_{143 \times 217}^{\text{CIB}}$	0.605	$< 0.479$	$Y_P$	0.247798	$0.24785 \pm 0.00013$			

Best-fit  $\chi_{\text{eff}}^2 = 7795.60$ ; R-1 = 0.04182

$\chi_{\text{eff}}^2$ : CMB - lowl: -7.68 CamSpec: 7798.36 Hubble - HST: 4.19

## 6.15 base\_mnu\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022225	$0.02226 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.557	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8325	$1.823 \pm 0.014$
$\Omega_c h^2$	0.11815	$0.1171 \pm 0.0028$	$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00158$
$100\theta_{\text{MC}}$	1.04159	$1.04165 \pm 0.00067$	$c_{217}$	0.99648	$0.9964 \pm 0.0014$	Age/Gyr	13.755	$13.803^{+0.064}_{-0.094}$
$\tau$	0.0948	$0.121 \pm 0.038$	$\xi^{\text{tSZ-CIB}}$	0.21	—	$z_*$	1090.04	$1089.91 \pm 0.59$
$\Sigma m_\nu$	0.000	$< 0.147$	$A^{\text{kSZ}}$	0.66	$< 5.91$	$r_*$	145.02	$145.26 \pm 0.61$
$n_s$	0.9674	$0.9689 \pm 0.0091$	$\beta_1^1$	0.65	$0.46 \pm 0.56$	$100\theta_*$	1.04169	$1.04183 \pm 0.00065$
$\ln(10^{10} A_s)$	3.098	$3.145 \pm 0.073$	$\Omega_\Lambda$	0.7020	$0.695^{+0.023}_{-0.017}$	$z_{\text{drag}}$	1059.55	$1059.56 \pm 0.64$
$A_{100}^{\text{PS}}$	152	$162 \pm 60$	$\Omega_m$	0.2980	$0.305^{+0.017}_{-0.023}$	$r_{\text{drag}}$	147.74	$147.98 \pm 0.60$
$A_{143}^{\text{PS}}$	64.8	$51 \pm 10$	$\sigma_8$	0.8416	$0.830^{+0.039}_{-0.029}$	$k_D$	0.13996	$0.13975 \pm 0.00063$
$A_{217}^{\text{PS}}$	119.9	$107^{+20}_{-10}$	$z_{\text{re}}$	11.44	$13.4^{+3.5}_{-2.5}$	$100\theta_D$	0.161232	$0.16123 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.00	$< 9.93$	$H_0$	68.63	$68.0^{+1.8}_{-1.5}$	$z_{\text{eq}}$	3354	$3329 \pm 62$
$A_{217}^{\text{CIB}}$	25.0	$28^{+6}_{-8}$	$10^9 A_s$	2.215	$2.33 \pm 0.17$	$100\theta_{\text{eq}}$	0.8220	$0.827 \pm 0.012$
$A_{143}^{\text{tSZ}}$	5.76	—	$\Omega_m h^2$	0.14038	$0.1407 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07239	$0.0721^{+0.0012}_{-0.0011}$
$r_{143 \times 217}^{\text{PS}}$	0.916	$> 0.852$	$\Omega_m h^3$	0.09634	$0.0957^{+0.0011}_{-0.00069}$			
$r_{143 \times 217}^{\text{CIB}}$	0.653	$0.40^{+0.21}_{-0.28}$	$Y_P$	0.247778	$0.24779 \pm 0.00014$			

Best-fit  $\chi_{\text{eff}}^2 = 8219.58$ ; R-1 = 0.01718

$\chi_{\text{eff}}^2$ : CMB - lowl: -7.52 CamSpec: 7798.21 SN - SNLS: 428.38

## 6.16 base\_mnu\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022112	$0.02212 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.574	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8388	$1.828 \pm 0.014$
$\Omega_c h^2$	0.11962	$0.1185 \pm 0.0029$	$c_{100}$	1.000549	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00263$
$100\theta_{\text{MC}}$	1.04137	$1.04140 \pm 0.00067$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.779	$13.873^{+0.073}_{-0.14}$
$\tau$	0.0928	$0.114 \pm 0.040$	$\xi^{\text{tSZ-CIB}}$	0.53	—	$z_*$	1090.31	$1090.24 \pm 0.61$
$\Sigma m_\nu$	0.000	$< 0.245$	$A^{\text{kSZ}}$	1.12	$< 6.05$	$r_*$	144.72	$144.95 \pm 0.63$
$n_s$	0.9641	$0.9647 \pm 0.0092$	$\beta_1^1$	0.67	$0.50 \pm 0.56$	$100\theta_*$	1.04150	$1.04162 \pm 0.00065$
$\ln(10^{10} A_s)$	3.097	$3.133 \pm 0.075$	$\Omega_\Lambda$	0.6930	$0.676^{+0.034}_{-0.020}$	$z_{\text{drag}}$	1059.40	$1059.36 \pm 0.64$
$A_{100}^{\text{PS}}$	163	$166 \pm 60$	$\Omega_m$	0.3070	$0.324^{+0.020}_{-0.034}$	$r_{\text{drag}}$	147.48	$147.71 \pm 0.61$
$A_{143}^{\text{PS}}$	67.2	$53 \pm 10$	$\sigma_8$	0.8457	$0.811^{+0.052}_{-0.033}$	$k_D$	0.14015	$0.13995 \pm 0.00063$
$A_{217}^{\text{PS}}$	119.3	$107^{+20}_{-10}$	$z_{\text{re}}$	11.34	$12.9^{+3.7}_{-2.8}$	$100\theta_D$	0.161312	$0.16132 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$H_0$	67.94	$66.6^{+2.5}_{-1.7}$	$z_{\text{eq}}$	3387	$3361 \pm 65$
$A_{217}^{\text{CIB}}$	25.2	$28^{+6}_{-9}$	$10^9 A_s$	2.214	$2.30 \pm 0.17$	$100\theta_{\text{eq}}$	0.8157	$0.821 \pm 0.013$
$A_{143}^{\text{tSZ}}$	4.57	—	$\Omega_m h^2$	0.14173	$0.1429^{+0.0030}_{-0.0037}$	$r_{\text{drag}}/D_V(0.57)$	0.07187	$0.0711^{+0.0016}_{-0.0012}$
$r_{143 \times 217}^{\text{PS}}$	0.959	$> 0.850$	$\Omega_m h^3$	0.09630	$0.0951^{+0.0016}_{-0.00079}$			
$r_{143 \times 217}^{\text{CIB}}$	0.760	$0.41 \pm 0.23$	$Y_P$	0.247729	$0.24773 \pm 0.00014$			

Best-fit  $\chi^2_{\text{eff}} = 7921.48$ ; R-1 = 0.00977

$\chi^2_{\text{eff}}$ : CMB - lowl: -6.98 CamSpec: 7797.73 SN - Union2.1: 130.33

## 6.17 base\_mnu\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02265	$0.02235 \pm 0.00055$	$\sigma_8$	0.815	$0.714^{+0.091}_{-0.067}$	$z_*$	1089.20	$1089.79^{+0.97}_{-1.1}$
$\Omega_c h^2$	0.11461	$0.1151 \pm 0.0048$	$z_{\text{re}}$	10.93	$10.7 \pm 1.1$	$r_*$	145.62	$145.5 \pm 1.2$
$100\theta_{\text{MC}}$	1.04033	$1.0398 \pm 0.0023$	$H_0$	69.31	$64.8^{+4.9}_{-4.1}$	$100\theta_*$	1.04044	$1.0401 \pm 0.0022$
$\tau$	0.0913	$0.087^{+0.013}_{-0.015}$	$10^9 A_s$	2.221	$2.195^{+0.065}_{-0.072}$	$z_{\text{drag}}$	1060.28	$1059.7 \pm 1.2$
$\Sigma m_\nu$	0.070	$< 0.688$	$\Omega_m h^2$	0.1380	$0.1432^{+0.0061}_{-0.0077}$	$r_{\text{drag}}$	148.22	$148.2 \pm 1.3$
$n_s$	0.9729	$0.965 \pm 0.015$	$\Omega_m h^3$	0.09566	$0.0925^{+0.0031}_{-0.0027}$	$k_D$	0.13978	$0.1397 \pm 0.0014$
$\ln(10^{10} A_s)$	3.1006	$3.088 \pm 0.030$	$Y_P$	0.247958	$0.24783 \pm 0.00023$	$100\theta_D$	0.16058	$0.16076 \pm 0.00053$
$A_{\text{tSZ}}$	1.08	—	$10^9 A_s e^{-2\tau}$	1.8503	$1.844 \pm 0.031$	$z_{\text{eq}}$	3280	$3285 \pm 110$
$\Omega_\Lambda$	0.713	$0.652^{+0.079}_{-0.043}$	$\Omega_\nu h^2$	0.00075	$< 0.00739$	$100\theta_{\text{eq}}$	0.8362	$0.836 \pm 0.021$
$\Omega_m$	0.287	$0.348^{+0.043}_{-0.079}$	Age/Gyr	13.762	$14.04^{+0.22}_{-0.28}$	$r_{\text{drag}}/D_V(0.57)$	0.07293	$0.0701 \pm 0.0028$

Best-fit  $\chi^2_{\text{eff}} = 7558.07$ ; R-1 = 0.00651

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.07

## 6.18 base\_mnu\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022569	$0.02256 \pm 0.00045$	$\sigma_8$	0.783	$0.759^{+0.066}_{-0.045}$	$z_*$	1089.32	$1089.24 \pm 0.59$
$\Omega_c h^2$	0.11464	$0.1133 \pm 0.0034$	$z_{\text{re}}$	10.86	$10.8 \pm 1.1$	$r_*$	145.65	$145.99 \pm 0.95$
$100\theta_{\text{MC}}$	1.04020	$1.0400 \pm 0.0021$	$H_0$	67.94	$67.7 \pm 1.1$	$100\theta_*$	1.04039	$1.0402 \pm 0.0021$
$\tau$	0.0898	$0.089^{+0.012}_{-0.015}$	$10^9 A_s$	2.218	$2.198^{+0.064}_{-0.072}$	$z_{\text{drag}}$	1060.09	$1060.0 \pm 1.1$
$\Sigma m_\nu$	0.204	$< 0.349$	$\Omega_m h^2$	0.13940	$0.1388 \pm 0.0026$	$r_{\text{drag}}$	148.28	$148.6 \pm 1.0$
$n_s$	0.9730	$0.972 \pm 0.011$	$\Omega_m h^3$	0.09471	$0.0940 \pm 0.0020$	$k_D$	0.13968	$0.1393 \pm 0.0013$
$\ln(10^{10} A_s)$	3.0993	$3.090 \pm 0.031$	$Y_P$	0.247924	$0.24792 \pm 0.00019$	$100\theta_D$	0.16065	$0.16067 \pm 0.00050$
$A_{\text{tSZ}}$	0.03	—	$10^9 A_s e^{-2\tau}$	1.8534	$1.839 \pm 0.027$	$z_{\text{eq}}$	3279	$3246 \pm 81$
$\Omega_\Lambda$	0.6980	$0.697 \pm 0.013$	$\Omega_\nu h^2$	0.00219	$< 0.00375$	$100\theta_{\text{eq}}$	0.8362	$0.843^{+0.014}_{-0.018}$
$\Omega_m$	0.3020	$0.303 \pm 0.013$	Age/Gyr	13.845	$13.88 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07207	$0.07204 \pm 0.00073$

Best-fit  $\chi^2_{\text{eff}} = 7559.18$ ; R-1 = 0.02076

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.02 DR7: 0.64 DR9: 0.57 CMB - WMAP: 7557.96

## 6.19 base\_mnu\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022821	$0.02291^{+0.00050}_{-0.00042}$	$\sigma_8$	0.8180	$0.779^{+0.043}_{-0.028}$	$z_*$	1088.70	$1088.48 \pm 0.63$
$\Omega_c h^2$	0.11136	$0.1098 \pm 0.0037$	$z_{\text{re}}$	11.06	$10.9 \pm 1.2$	$r_*$	146.36	$146.7 \pm 1.1$
$100\theta_{\text{MC}}$	1.04091	$1.0413^{+0.0023}_{-0.0020}$	$H_0$	71.44	$71.1 \pm 1.8$	$100\theta_*$	1.04098	$1.0414^{+0.0022}_{-0.0020}$
$\tau$	0.0946	$0.094^{+0.014}_{-0.016}$	$10^9 A_s$	2.220	$2.202^{+0.068}_{-0.078}$	$z_{\text{drag}}$	1060.43	$1060.5^{+1.2}_{-0.96}$
$\Sigma m_\nu$	0.002	$< 0.160$	$\Omega_m h^2$	0.13420	$0.1342 \pm 0.0037$	$r_{\text{drag}}$	148.92	$149.2 \pm 1.1$
$n_s$	0.9809	$0.982 \pm 0.012$	$\Omega_m h^3$	0.09587	$0.0953^{+0.0021}_{-0.0018}$	$k_D$	0.13917	$0.1389 \pm 0.0013$
$\ln(10^{10} A_s)$	3.1003	$3.091 \pm 0.032$	$Y_P$	0.248030	$0.24807^{+0.00021}_{-0.00017}$	$100\theta_D$	0.16056	$0.16056^{+0.00047}_{-0.00053}$
$A_{\text{tSZ}}$	0.10	—	$10^9 A_s e^{-2\tau}$	1.8376	$1.824 \pm 0.028$	$z_{\text{eq}}$	3206	$3171 \pm 89$
$\Omega_\Lambda$	0.7370	$0.734^{+0.022}_{-0.018}$	$\Omega_\nu h^2$	0.00002	$< 0.00172$	$100\theta_{\text{eq}}$	0.8515	$0.860 \pm 0.018$
$\Omega_m$	0.2630	$0.266^{+0.018}_{-0.022}$	Age/Gyr	13.680	$13.716^{+0.099}_{-0.12}$	$r_{\text{drag}}/D_V(0.57)$	0.07455	$0.0745 \pm 0.0014$

Best-fit  $\chi^2_{\text{eff}} = 7559.36$ ; R-1 = 0.04451

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.33 Hubble - HST: 1.03

## 6.20 base\_mnu\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02272	$0.02275^{+0.00053}_{-0.00048}$	$\sigma_8$	0.8185	$0.768^{+0.054}_{-0.032}$	$z_*$	1088.87	$1088.76 \pm 0.72$
$\Omega_c h^2$	0.11185	$0.1106^{+0.0038}_{-0.0042}$	$z_{\text{re}}$	11.06	$10.9 \pm 1.2$	$r_*$	146.31	$146.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04031	$1.0407 \pm 0.0022$	$H_0$	70.96	$69.9^{+2.5}_{-2.2}$	$100\theta_*$	1.04039	$1.0408 \pm 0.0022$
$\tau$	0.0942	$0.092^{+0.013}_{-0.016}$	$10^9 A_s$	2.218	$2.196^{+0.066}_{-0.076}$	$z_{\text{drag}}$	1060.24	$1060.2^{+1.2}_{-1.1}$
$\Sigma m_\nu$	0.001	$< 0.234$	$\Omega_m h^2$	0.13457	$0.1354 \pm 0.0041$	$r_{\text{drag}}$	148.90	$149.2 \pm 1.1$
$n_s$	0.9780	$0.978 \pm 0.013$	$\Omega_m h^3$	0.09550	$0.0946^{+0.0022}_{-0.0020}$	$k_D$	0.13912	$0.1389 \pm 0.0013$
$\ln(10^{10} A_s)$	3.0991	$3.089 \pm 0.032$	$Y_P$	0.247988	$0.24800^{+0.00023}_{-0.00020}$	$100\theta_D$	0.16058	$0.16063^{+0.00048}_{-0.00055}$
$A_{\text{tSZ}}$	0.37	—	$10^9 A_s e^{-2\tau}$	1.8370	$1.826 \pm 0.028$	$z_{\text{eq}}$	3215	$3187 \pm 92$
$\Omega_\Lambda$	0.7328	$0.721^{+0.029}_{-0.022}$	$\Omega_\nu h^2$	0.00001	$< 0.00252$	$100\theta_{\text{eq}}$	0.8489	$0.856 \pm 0.019$
$\Omega_m$	0.2672	$0.279^{+0.022}_{-0.029}$	Age/Gyr	13.711	$13.79^{+0.12}_{-0.16}$	$r_{\text{drag}}/D_V(0.57)$	0.07422	$0.0736 \pm 0.0017$

Best-fit  $\chi^2_{\text{eff}} = 7984.54$ ; R-1 = 0.02385

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.16 SN - SNLS: 426.38

## 6.21 base\_mnu\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022701	$0.02258 \pm 0.00049$	$\sigma_8$	0.822	$0.752^{+0.071}_{-0.043}$	$z_*$	1089.04	$1089.20 \pm 0.76$
$\Omega_c h^2$	0.11349	$0.1129 \pm 0.0040$	$z_{\text{re}}$	10.99	$10.8 \pm 1.1$	$r_*$	145.88	$146.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04039	$1.0402 \pm 0.0022$	$H_0$	70.23	$67.8^{+3.1}_{-2.5}$	$100\theta_*$	1.04047	$1.0404 \pm 0.0022$
$\tau$	0.0928	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.221	$2.197^{+0.064}_{-0.073}$	$z_{\text{drag}}$	1060.31	$1060.0 \pm 1.1$
$\Sigma m_\nu$	0.020	$< 0.375$	$\Omega_m h^2$	0.13640	$0.1387 \pm 0.0045$	$r_{\text{drag}}$	148.47	$148.7 \pm 1.1$
$n_s$	0.9753	$0.972 \pm 0.013$	$\Omega_m h^3$	0.09580	$0.0939^{+0.0025}_{-0.0022}$	$k_D$	0.13956	$0.1393 \pm 0.0013$
$\ln(10^{10} A_s)$	3.1004	$3.089 \pm 0.031$	$Y_P$	0.247980	$0.24793 \pm 0.00021$	$100\theta_D$	0.16056	$0.16067 \pm 0.00051$
$A_{\text{tSZ}}$	1.00	—	$10^9 A_s e^{-2\tau}$	1.8447	$1.836 \pm 0.029$	$z_{\text{eq}}$	3254	$3237 \pm 95$
$\Omega_\Lambda$	0.7235	$0.696^{+0.039}_{-0.027}$	$\Omega_\nu h^2$	0.00021	$< 0.00403$	$100\theta_{\text{eq}}$	0.8413	$0.845 \pm 0.019$
$\Omega_m$	0.2765	$0.304^{+0.027}_{-0.039}$	Age/Gyr	13.725	$13.89^{+0.14}_{-0.19}$	$r_{\text{drag}}/D_V(0.57)$	0.07361	$0.0721 \pm 0.0019$

Best-fit  $\chi^2_{\text{eff}} = 7687.90$ ; R-1 = 0.01195

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.03 SN - Union2.1: 129.87



## 6.22 base\_mnu\_planck\_lowl\_lowLike\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022295	$0.02184 \pm 0.00036$	$\gamma^{\text{CIB}}$	0.535	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8301	$1.840 \pm 0.013$
$\Omega_c h^2$	0.11758	$0.1215 \pm 0.0031$	$c_{100}$	1.000603	$1.00057 \pm 0.00040$	$\Omega_\nu h^2$	0.00053	$< 0.00674$
$100\theta_{\text{MC}}$	1.04154	$1.04084 \pm 0.00073$	$c_{217}$	0.99631	$0.9965 \pm 0.0014$	Age/Gyr	13.765	$14.06^{+0.17}_{-0.27}$
$\tau$	0.0954	$0.091 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.90	$1090.97^{+0.73}_{-0.97}$
$\Sigma m_\nu$	0.049	$< 0.627$	$A^{\text{kSZ}}$	0.6	—	$r_*$	145.11	$144.26^{+0.87}_{-0.71}$
$n_s$	0.9691	$0.955^{+0.011}_{-0.0095}$	$\beta_1^1$	0.69	$0.60 \pm 0.56$	$100\theta_*$	1.04168	$1.04119 \pm 0.00065$
$\ln(10^{10} A_s)$	3.0978	$3.095 \pm 0.024$	$\Omega_\Lambda$	0.701	$0.619^{+0.083}_{-0.042}$	$z_{\text{drag}}$	1059.67	$1058.99 \pm 0.65$
$A_{100}^{\text{PS}}$	129	$177 \pm 60$	$\Omega_m$	0.299	$0.381^{+0.042}_{-0.083}$	$r_{\text{drag}}$	147.82	$147.10^{+0.80}_{-0.67}$
$A_{143}^{\text{PS}}$	57.0	$55 \pm 10$	$\sigma_8$	0.832	$0.746^{+0.081}_{-0.046}$	$k_D$	0.13994	$0.14044^{+0.00067}_{-0.00079}$
$A_{217}^{\text{PS}}$	121.2	$106^{+20}_{-20}$	$z_{\text{re}}$	11.46	$11.4 \pm 1.1$	$100\theta_D$	0.161150	$0.16145 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$H_0$	68.53	$63.0^{+4.9}_{-3.4}$	$z_{\text{eq}}$	3342	$3425 \pm 68$
$A_{217}^{\text{CIB}}$	23.6	$30^{+6}_{-9}$	$10^9 A_s$	2.215	$2.210^{+0.051}_{-0.057}$	$100\theta_{\text{eq}}$	0.8244	$0.809 \pm 0.012$
$A_{143}^{\text{tSZ}}$	7.95	—	$\Omega_m h^2$	0.1404	$0.1485^{+0.0050}_{-0.0075}$	$r_{\text{drag}}/D_V(0.57)$	0.07235	$0.0687^{+0.0031}_{-0.0024}$
$r_{143 \times 217}^{\text{PS}}$	0.898	$> 0.850$	$\Omega_m h^3$	0.09622	$0.0933^{+0.0028}_{-0.0017}$			
$r_{143 \times 217}^{\text{CIB}}$	0.228	$0.44 \pm 0.22$	$Y_P$	0.247808	$0.24761 \pm 0.00016$			

Best-fit  $\chi_{\text{eff}}^2 = 9815.87$ ; R-1 = 0.02027

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.72 lowLike: 2014.42 lowl: -7.81 CamSpec: 7798.85

### 6.23 base\_mnu\_planck\_lowl\_lowLike\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022262	$0.02219 \pm 0.00025$	$\gamma^{\text{CIB}}$	0.531	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8311	$1.8276 \pm 0.0087$
$\Omega_c h^2$	0.11797	$0.1179^{+0.0015}_{-0.0018}$	$c_{100}$	1.000606	$1.00057 \pm 0.00039$	$\Omega_\nu h^2$	0.00075	$< 0.00152$
$100\theta_{\text{MC}}$	1.04153	$1.04149 \pm 0.00057$	$c_{217}$	0.99628	$0.9964 \pm 0.0013$	Age/Gyr	13.781	$13.811^{+0.048}_{-0.061}$
$\tau$	0.0946	$0.092 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.979	$1090.08 \pm 0.39$
$\Sigma m_\nu$	0.070	$< 0.142$	$A^{\text{ksZ}}$	1.81	$< 6.15$	$r_*$	145.034	$145.09 \pm 0.38$
$n_s$	0.9675	$0.9648 \pm 0.0057$	$\beta_1^1$	0.68	$0.49^{+0.53}_{-0.64}$	$100\theta_*$	1.04167	$1.04167 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0967	$3.090 \pm 0.025$	$\Omega_\Lambda$	0.6966	$0.692^{+0.013}_{-0.011}$	$z_{\text{drag}}$	1059.63	$1059.45 \pm 0.55$
$A_{100}^{\text{PS}}$	126	$171^{+60}_{-60}$	$\Omega_m$	0.3034	$0.308^{+0.011}_{-0.013}$	$r_{\text{drag}}$	147.745	$147.83 \pm 0.41$
$A_{143}^{\text{PS}}$	55.0	$52 \pm 10$	$\sigma_8$	0.8275	$0.814^{+0.024}_{-0.015}$	$k_D$	0.13999	$0.13985^{+0.00059}_{-0.00050}$
$A_{217}^{\text{PS}}$	120.5	$104^{+20}_{-20}$	$z_{\text{re}}$	11.42	$11.2 \pm 1.1$	$100\theta_D$	0.161180	$0.16128^{+0.00031}_{-0.00035}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$H_0$	68.17	$67.7^{+1.1}_{-0.89}$	$z_{\text{eq}}$	3350.9	$3349^{+34}_{-39}$
$A_{217}^{\text{CIB}}$	23.3	$29^{+6}_{-8}$	$10^9 A_s$	2.213	$2.199 \pm 0.055$	$100\theta_{\text{eq}}$	0.8227	$0.8231^{+0.0075}_{-0.0066}$
$A_{143}^{\text{tSZ}}$	8.15	—	$\Omega_m h^2$	0.14099	$0.1413 \pm 0.0016$	$r_{\text{drag}}/D_V(0.57)$	0.07210	$0.07186 \pm 0.00066$
$r_{143 \times 217}^{\text{PS}}$	0.900	$> 0.848$	$\Omega_m h^3$	0.09611	$0.09572^{+0.00080}_{-0.00068}$			
$r_{143 \times 217}^{\text{CIB}}$	0.335	$< 0.544$	$Y_P$	0.247793	$0.24776 \pm 0.00011$			

Best-fit  $\chi_{\text{eff}}^2 = 9817.12$ ; R-1 = 0.08741

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.61 DR7: 0.62 6DF: 0.04 CMB - lensing: 9.72 lowLike: 2014.41 lowl: -7.66 CamSpec: 7798.67

## 6.24 base\_mnu\_planck\_lowl\_lowLike\_lensing\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022471	$0.02232 \pm 0.00026$	$\gamma^{\text{CIB}}$	0.537	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8228	$1.8233^{+0.0088}_{-0.011}$
$\Omega_c h^2$	0.11598	$0.1168 \pm 0.0019$	$c_{100}$	1.000599	$1.00058 \pm 0.00039$	$\Omega_\nu h^2$	0.000000	$< 0.000951$
$100\theta_{\text{MC}}$	1.04190	$1.04174^{+0.00064}_{-0.00056}$	$c_{217}$	0.99620	$0.9964 \pm 0.0013$	Age/Gyr	13.710	$13.768^{+0.041}_{-0.066}$
$\tau$	0.1005	$0.095^{+0.014}_{-0.012}$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1089.536	$1089.81^{+0.40}_{-0.46}$
$\Sigma m_\nu$	0.0000	$< 0.0884$	$A^{\text{kSZ}}$	2.22	$< 6.21$	$r_*$	145.400	$145.30 \pm 0.45$
$n_s$	0.9728	$0.9679 \pm 0.0063$	$\beta_1^1$	0.62	$0.45^{+0.53}_{-0.66}$	$100\theta_*$	1.04199	$1.04189^{+0.00062}_{-0.00056}$
$\ln(10^{10} A_s)$	3.1039	$3.094 \pm 0.024$	$\Omega_\Lambda$	0.7153	$0.703^{+0.016}_{-0.010}$	$z_{\text{drag}}$	1059.97	$1059.65 \pm 0.56$
$A_{100}^{\text{PS}}$	116	$165 \pm 60$	$\Omega_m$	0.2847	$0.297^{+0.010}_{-0.016}$	$r_{\text{drag}}$	148.050	$148.00^{+0.43}_{-0.49}$
$A_{143}^{\text{PS}}$	50.1	$51 \pm 10$	$\sigma_8$	0.8379	$0.820^{+0.021}_{-0.010}$	$k_D$	0.13983	$0.13977^{+0.00063}_{-0.00052}$
$A_{217}^{\text{PS}}$	120.2	$104^{+20}_{-20}$	$z_{\text{re}}$	11.78	$11.4^{+1.2}_{-0.94}$	$100\theta_D$	0.161014	$0.16118^{+0.00030}_{-0.00035}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$H_0$	69.74	$68.7^{+1.3}_{-0.88}$	$z_{\text{eq}}$	3308.2	$3324 \pm 43$
$A_{217}^{\text{CIB}}$	22.4	$28^{+6}_{-9}$	$10^9 A_s$	2.229	$2.207 \pm 0.052$	$100\theta_{\text{eq}}$	0.8315	$0.8281 \pm 0.0084$
$A_{143}^{\text{tSZ}}$	8.50	—	$\Omega_m h^2$	0.13845	$0.1399^{+0.0017}_{-0.0021}$	$r_{\text{drag}}/D_V(0.57)$	0.07320	$0.07250^{+0.00090}_{-0.00068}$
$r_{143 \times 217}^{\text{PS}}$	0.953	$> 0.850$	$\Omega_m h^3$	0.09655	$0.09604^{+0.00073}_{-0.00064}$			
$r_{143 \times 217}^{\text{CIB}}$	0.195	$< 0.549$	$Y_P$	0.247883	$0.24782 \pm 0.00011$			

Best-fit  $\chi_{\text{eff}}^2 = 9819.59$ ; R-1 = 0.07910

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.14 lowLike: 2014.65 lowl: -8.06 CamSpec: 7800.29 Hubble - HST: 2.90

## 6.25 base\_mnu\_planck\_lowl\_lowLike\_lensing\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022354	$0.02222 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.538	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8269	$1.826 \pm 0.010$
$\Omega_c h^2$	0.11673	$0.1176^{+0.0019}_{-0.0022}$	$c_{100}$	1.000603	$1.00057 \pm 0.00039$	$\Omega_\nu h^2$	0.00000	$< 0.00151$
$100\theta_{\text{MC}}$	1.04170	$1.04155^{+0.00069}_{-0.00059}$	$c_{217}$	0.99638	$0.9964 \pm 0.0013$	Age/Gyr	13.732	$13.806^{+0.052}_{-0.091}$
$\tau$	0.0964	$0.094 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.40	—	$z_*$	1089.749	$1090.01^{+0.43}_{-0.53}$
$\Sigma m_\nu$	0.000	$< 0.141$	$A^{\text{ksZ}}$	0.77	$< 6.18$	$r_*$	145.292	$145.15 \pm 0.47$
$n_s$	0.9712	$0.9657 \pm 0.0066$	$\beta_1^1$	0.58	$0.48^{+0.54}_{-0.63}$	$100\theta_*$	1.04180	$1.04173^{+0.00066}_{-0.00059}$
$\ln(10^{10} A_s)$	3.0980	$3.092 \pm 0.024$	$\Omega_\Lambda$	0.7103	$0.693^{+0.022}_{-0.013}$	$z_{\text{drag}}$	1059.74	$1059.50 \pm 0.57$
$A_{100}^{\text{PS}}$	154	$168 \pm 60$	$\Omega_m$	0.2897	$0.307^{+0.013}_{-0.022}$	$r_{\text{drag}}$	147.980	$147.88 \pm 0.48$
$A_{143}^{\text{PS}}$	64.0	$52 \pm 10$	$\sigma_8$	0.8381	$0.813^{+0.027}_{-0.014}$	$k_D$	0.13981	$0.13982^{+0.00061}_{-0.00054}$
$A_{217}^{\text{PS}}$	119.5	$105^{+20}_{-20}$	$z_{\text{re}}$	11.49	$11.3 \pm 1.1$	$100\theta_D$	0.161118	$0.16125^{+0.00032}_{-0.00036}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$H_0$	69.29	$67.9^{+1.8}_{-1.1}$	$z_{\text{eq}}$	3323.4	$3341^{+42}_{-50}$
$A_{217}^{\text{CIB}}$	23.9	$29^{+6}_{-9}$	$10^9 A_s$	2.215	$2.204 \pm 0.054$	$100\theta_{\text{eq}}$	0.8282	$0.8247^{+0.0095}_{-0.0086}$
$A_{143}^{\text{tSZ}}$	4.95	—	$\Omega_m h^2$	0.13908	$0.1410^{+0.0019}_{-0.0028}$	$r_{\text{drag}}/D_V(0.57)$	0.07289	$0.0720^{+0.0012}_{-0.00080}$
$r_{143 \times 217}^{\text{PS}}$	0.925	$> 0.848$	$\Omega_m h^3$	0.09638	$0.09571^{+0.00096}_{-0.00065}$			
$r_{143 \times 217}^{\text{CIB}}$	0.330	$0.43 \pm 0.23$	$Y_P$	0.247833	$0.24778 \pm 0.00012$			

Best-fit  $\chi_{\text{eff}}^2 = 10243.86$ ; R-1 = 0.05903

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.46 lowLike: 2014.35 lowl: -7.99 CamSpec: 7799.65 SN - SNLS: 427.74

## 6.26 base\_mnu\_planck\_lowl\_lowLike\_highL\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022171	$0.02199 \pm 0.00032$	$\beta_1^1$	0.39	$0.42 \pm 0.55$	$\sigma_8$	0.8159	$0.774^{+0.065}_{-0.029}$
$\Omega_c h^2$	0.11879	$0.1205^{+0.0026}_{-0.0032}$	$A_{148}^{\text{PS, ACT}}$	10.41	$10.62 \pm 0.59$	$z_{\text{re}}$	11.60	$11.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04139	$1.04107^{+0.00076}_{-0.00069}$	$A_{218}^{\text{PS, ACT}}$	75.99	$76.7 \pm 4.5$	$H_0$	67.23	$64.7^{+4.1}_{-2.2}$
$\tau$	0.0960	$0.092^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.44	$7.76^{+1.4}_{-1.6}$	$10^9 A_s$	2.217	$2.208^{+0.051}_{-0.060}$
$\Sigma m_\nu$	0.129	$< 0.410$	$A_{150}^{\text{PS, SPT}}$	9.92	$10.14 \pm 0.52$	$\Omega_m h^2$	0.14235	$0.1460^{+0.0034}_{-0.0062}$
$n_s$	0.9616	$0.9563^{+0.0091}_{-0.0076}$	$A_{220}^{\text{PS, SPT}}$	72.95	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09570	$0.0944^{+0.0022}_{-0.0011}$
$\ln(10^{10} A_s)$	3.0988	$3.094^{+0.024}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.807	$0.831 \pm 0.089$	$Y_{\text{P}}$	0.247754	$0.24768 \pm 0.00014$
$A_{100}^{\text{PS}}$	203	$216 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.556	$0.58^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8297	$1.835 \pm 0.012$
$A_{143}^{\text{PS}}$	72.6	$74 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9070	$0.935^{+0.023}_{-0.026}$	$\Omega_\nu h^2$	0.00138	$< 0.00441$
$A_{217}^{\text{PS}}$	59.6	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	Age/Gyr	13.828	$13.96^{+0.11}_{-0.22}$
$A_{143}^{\text{CIB}}$	3.35	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.84 \pm 0.20$	$z_*$	1090.17	$1090.63^{+0.57}_{-0.76}$
$A_{217}^{\text{CIB}}$	53.0	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9919 \pm 0.0074$	$r_*$	144.88	$144.49^{+0.77}_{-0.58}$
$A_{143}^{\text{tSZ}}$	4.81	$2.44^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0031	$1.005 \pm 0.014$	$100\theta_*$	1.04157	$1.04135 \pm 0.00064$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.826^{+0.068}_{-0.076}$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9879 \pm 0.0073$	$z_{\text{drag}}$	1059.47	$1059.22 \pm 0.60$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9615	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.62	$147.28^{+0.72}_{-0.57}$
$\gamma^{\text{CIB}}$	0.664	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9851	$0.983^{+0.019}_{-0.021}$	$k_{\text{D}}$	0.14006	$0.14032^{+0.00063}_{-0.00071}$
$c_{100}$	1.000588	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9858	$0.9869 \pm 0.0097$	$100\theta_{\text{D}}$	0.161259	$0.16136 \pm 0.00033$
$c_{217}$	0.99731	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0177	$1.024^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3368	$3405^{+57}_{-70}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.423$	$\Omega_\Lambda$	0.6851	$0.647^{+0.062}_{-0.026}$	$100\theta_{\text{eq}}$	0.8193	$0.813^{+0.013}_{-0.011}$
$A^{\text{kSZ}}$	0.90	$5.05^{+2.7}_{-2.0}$	$\Omega_m$	0.3149	$0.353^{+0.026}_{-0.062}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07147	$0.0698^{+0.0027}_{-0.0015}$

Best-fit  $\chi_{\text{eff}}^2 = 10518.04$ ; R-1 = 0.01727

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.70 lensing: 9.47 lowl: -6.73 CamSpec: 7808.98 highL: 691.52

## 6.27 base\_mnu\_planck\_lowl\_lowLike\_highL\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022203	$0.02220 \pm 0.00024$	$\beta_1^1$	0.36	$0.37^{+0.61}_{-0.53}$	$\sigma_8$	0.8364	$0.817^{+0.022}_{-0.014}$
$\Omega_c h^2$	0.11837	$0.1182 \pm 0.0016$	$A_{148}^{\text{PS, ACT}}$	10.47	$10.67 \pm 0.57$	$z_{\text{re}}$	11.27	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04148	$1.04152 \pm 0.00055$	$A_{218}^{\text{PS, ACT}}$	76.61	$76.9 \pm 4.5$	$H_0$	68.42	$67.74 \pm 0.92$
$\tau$	0.0927	$0.093^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.69	$7.92 \pm 1.5$	$10^9 A_s$	2.200	$2.199^{+0.048}_{-0.060}$
$\Sigma m_\nu$	0.016	$< 0.129$	$A_{150}^{\text{PS, SPT}}$	10.024	$10.22 \pm 0.50$	$\Omega_m h^2$	0.14075	$0.1415 \pm 0.0016$
$n_s$	0.9619	$0.9625 \pm 0.0054$	$A_{220}^{\text{PS, SPT}}$	73.62	$74.6 \pm 4.5$	$\Omega_m h^3$	0.09630	$0.09584^{+0.00076}_{-0.00065}$
$\ln(10^{10} A_s)$	3.0912	$3.090^{+0.022}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.786	$0.827^{+0.10}_{-0.092}$	$Y_P$	0.247768	$0.24777 \pm 0.00010$
$A_{100}^{\text{PS}}$	206	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.533	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8279	$1.8268 \pm 0.0085$
$A_{143}^{\text{PS}}$	72.9	$73 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9094	$0.934^{+0.022}_{-0.026}$	$\Omega_\nu h^2$	0.00017	$< 0.00138$
$A_{217}^{\text{PS}}$	60.1	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.424	$0.44 \pm 0.19$	Age/Gyr	13.765	$13.806^{+0.047}_{-0.055}$
$A_{143}^{\text{CIB}}$	3.07	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.84^{+0.19}_{-0.22}$	$z_*$	1090.084	$1090.09 \pm 0.38$
$A_{217}^{\text{CIB}}$	51.9	$50.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9929 \pm 0.0074$	$r_*$	144.977	$145.02 \pm 0.39$
$A_{143}^{\text{tSZ}}$	4.24	$2.47^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0039	$1.007 \pm 0.013$	$100\theta_*$	1.04161	$1.04169 \pm 0.00055$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.822 \pm 0.070$	$y_{148}^{\text{ACTe}}$	0.9880	$0.9889 \pm 0.0071$	$z_{\text{drag}}$	1059.51	$1059.49 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9623	$0.9650^{+0.0094}_{-0.011}$	$r_{\text{drag}}$	147.708	$147.75 \pm 0.42$
$\gamma^{\text{CIB}}$	0.654	$0.646^{+0.089}_{-0.076}$	$y_{95}^{\text{SPT}}$	0.9848	$0.985 \pm 0.020$	$k_D$	0.13998	$0.13994 \pm 0.00053$
$c_{100}$	1.000590	$1.00060 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9861	$0.9890 \pm 0.0094$	$100\theta_D$	0.161243	$0.16126 \pm 0.00031$
$c_{217}$	0.99727	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0183	$1.026 \pm 0.023$	$z_{\text{eq}}$	3359.1	$3355^{+39}_{-35}$
$\xi^{\text{tSZ-CIB}}$	0.011	$< 0.407$	$\Omega_\Lambda$	0.6993	$0.691^{+0.013}_{-0.011}$	$100\theta_{\text{eq}}$	0.8210	$0.8219^{+0.0066}_{-0.0075}$
$A^{\text{kSZ}}$	1.79	$4.79^{+2.6}_{-2.0}$	$\Omega_m$	0.3007	$0.309^{+0.011}_{-0.013}$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.07183 \pm 0.00064$

Best-fit  $\chi_{\text{eff}}^2 = 10518.64$ ; R-1 = 0.05291

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.42 DR9: 0.82 6DF: 0.06 CMB - lowLike: 2014.27 lensing: 9.82 lowl: -6.67 CamSpec: 7808.80 highL: 691.01

## 6.28 base\_mnu\_planck\_lowl\_lowLike\_highL\_lensing\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022406	$0.02234^{+0.00025}_{-0.00033}$	$\beta_1^1$	0.40	$0.35^{+0.61}_{-0.52}$	$\sigma_8$	0.8365	$0.821^{+0.018}_{-0.011}$
$\Omega_c h^2$	0.11645	$0.1169^{+0.0022}_{-0.0020}$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.70 \pm 0.59$	$z_{\text{re}}$	11.68	$11.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04186	$1.04178^{+0.00067}_{-0.00059}$	$A_{218}^{\text{PS, ACT}}$	75.85	$77.2 \pm 4.6$	$H_0$	69.49	$68.7 \pm 1.2$
$\tau$	0.0989	$0.096^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.47	$7.97^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.207^{+0.047}_{-0.061}$
$\Sigma m_\nu$	0.0000	$< 0.0770$	$A_{150}^{\text{PS, SPT}}$	9.98	$10.26 \pm 0.52$	$\Omega_m h^2$	0.13886	$0.1399 \pm 0.0021$
$n_s$	0.9675	$0.9659 \pm 0.0061$	$A_{220}^{\text{PS, SPT}}$	72.87	$74.9^{+4.7}_{-4.3}$	$\Omega_m h^3$	0.09649	$0.09615 \pm 0.00069$
$\ln(10^{10} A_s)$	3.0996	$3.094^{+0.022}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.810	$0.828^{+0.10}_{-0.092}$	$Y_P$	0.247855	$0.24783^{+0.00011}_{-0.00014}$
$A_{100}^{\text{PS}}$	204	$210 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.560	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8207	$1.8216^{+0.0088}_{-0.011}$
$A_{143}^{\text{PS}}$	70.2	$71.4^{+7.7}_{-8.5}$	$r_{150 \times 220}^{\text{PS}}$	0.9080	$0.934^{+0.021}_{-0.027}$	$\Omega_\nu h^2$	0.000000	$< 0.000828$
$A_{217}^{\text{PS}}$	57.1	$57 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.421	$0.43 \pm 0.19$	Age/Gyr	13.721	$13.761^{+0.053}_{-0.060}$
$A_{143}^{\text{CIB}}$	3.36	$3.26 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.856	$0.83^{+0.19}_{-0.22}$	$z_*$	1089.660	$1089.79^{+0.54}_{-0.40}$
$A_{217}^{\text{CIB}}$	53.7	$50.2 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9930	$0.9937 \pm 0.0074$	$r_*$	145.325	$145.27 \pm 0.47$
$A_{143}^{\text{tSZ}}$	4.83	$2.50^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0049	$1.009^{+0.014}_{-0.012}$	$100\theta_*$	1.04194	$1.04191^{+0.00065}_{-0.00057}$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.817 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9893	$0.9899 \pm 0.0073$	$z_{\text{drag}}$	1059.82	$1059.71 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9634	$0.966 \pm 0.010$	$r_{\text{drag}}$	147.998	$147.96^{+0.46}_{-0.53}$
$\gamma^{\text{CIB}}$	0.679	$0.648 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9880	$0.987 \pm 0.021$	$k_D$	0.13984	$0.13982^{+0.00064}_{-0.00050}$
$c_{100}$	1.000598	$1.00061 \pm 0.00038$	$y_{150}^{\text{SPT}}$	0.9880	$0.9902 \pm 0.0093$	$100\theta_D$	0.161078	$0.16115 \pm 0.00033$
$c_{217}$	0.99731	$0.9974^{+0.0015}_{-0.0013}$	$y_{220}^{\text{SPT}}$	1.0200	$1.028 \pm 0.024$	$z_{\text{eq}}$	3318.0	$3326 \pm 46$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.388$	$\Omega_\Lambda$	0.7124	$0.703^{+0.015}_{-0.014}$	$100\theta_{\text{eq}}$	0.8294	$0.8279^{+0.0086}_{-0.0098}$
$A^{\text{kSZ}}$	0.84	$4.72^{+2.5}_{-2.0}$	$\Omega_m$	0.2876	$0.297^{+0.014}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07302	$0.07254 \pm 0.00087$

Best-fit  $\chi_{\text{eff}}^2 = 10521.47$ ; R-1 =0.14490

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.57 lensing: 9.09 lowl: -7.39 CamSpec: 7811.04 highL: 690.80 Hubble - HST: 3.26

## 6.29 base\_mnu\_planck\_lowl\_lowLike\_highL\_lensing\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022308	$0.02224^{+0.00025}_{-0.00030}$	$\beta_1$	0.34	$0.37^{+0.60}_{-0.53}$	$\sigma_8$	0.8354	$0.816^{+0.024}_{-0.013}$
$\Omega_c h^2$	0.11701	$0.1177 \pm 0.0021$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.68 \pm 0.58$	$z_{\text{re}}$	11.41	$11.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04169	$1.04159^{+0.00058}_{-0.00066}$	$A_{218}^{\text{PS, ACT}}$	76.64	$77.0 \pm 4.5$	$H_0$	69.15	$68.0^{+1.6}_{-1.2}$
$\tau$	0.0952	$0.094^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.70	$7.94^{+1.4}_{-1.7}$	$10^9 A_s$	2.204	$2.203^{+0.048}_{-0.061}$
$\Sigma m_\nu$	0.000	$< 0.123$	$A_{150}^{\text{PS, SPT}}$	10.02	$10.24 \pm 0.51$	$\Omega_m h^2$	0.13932	$0.1410^{+0.0022}_{-0.0026}$
$n_s$	0.9654	$0.9637 \pm 0.0063$	$A_{220}^{\text{PS, SPT}}$	73.64	$74.7 \pm 4.5$	$\Omega_m h^3$	0.09634	$0.09585^{+0.00090}_{-0.00066}$
$\ln(10^{10} A_s)$	3.0930	$3.092^{+0.022}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.784	$0.828 \pm 0.089$	$Y_{\text{P}}$	0.247813	$0.24778^{+0.00011}_{-0.00013}$
$A_{100}^{\text{PS}}$	204	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.530	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8223	$1.825 \pm 0.010$
$A_{143}^{\text{PS}}$	71.8	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9089	$0.934^{+0.022}_{-0.027}$	$\Omega_\nu h^2$	0.00000	$< 0.00132$
$A_{217}^{\text{PS}}$	59.2	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.424	$0.43 \pm 0.19$	Age/Gyr	13.738	$13.797^{+0.055}_{-0.081}$
$A_{143}^{\text{CIB}}$	3.08	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.84^{+0.19}_{-0.22}$	$z_*$	1089.831	$1089.99 \pm 0.47$
$A_{217}^{\text{CIB}}$	52.1	$50.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9922	$0.9932 \pm 0.0074$	$r_*$	145.254	$145.12^{+0.47}_{-0.52}$
$A_{143}^{\text{tSZ}}$	4.33	$2.48^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0044	$1.008 \pm 0.013$	$100\theta_*$	1.04180	$1.04175^{+0.00056}_{-0.00064}$
$r_{143 \times 217}^{\text{PS}}$	0.813	$0.820 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9885	$0.9893 \pm 0.0072$	$z_{\text{drag}}$	1059.67	$1059.55 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9628	$0.965^{+0.010}_{-0.011}$	$r_{\text{drag}}$	147.96	$147.84^{+0.46}_{-0.54}$
$\gamma^{\text{CIB}}$	0.656	$0.646 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9858	$0.986 \pm 0.020$	$k_{\text{D}}$	0.13980	$0.13988^{+0.00062}_{-0.00053}$
$c_{100}$	1.000594	$1.00061 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9870	$0.9894 \pm 0.0094$	$100\theta_{\text{D}}$	0.161172	$0.16123 \pm 0.00032$
$c_{217}$	0.99726	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0189	$1.027 \pm 0.024$	$z_{\text{eq}}$	3329.0	$3344 \pm 48$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.398$	$\Omega_\Lambda$	0.7087	$0.694^{+0.021}_{-0.014}$	$100\theta_{\text{eq}}$	0.8270	$0.8242 \pm 0.0093$
$A^{\text{kSZ}}$	1.66	$4.78^{+2.6}_{-2.0}$	$\Omega_m$	0.2913	$0.306^{+0.014}_{-0.021}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07279	$0.0720^{+0.0011}_{-0.00088}$

Best-fit  $\chi^2_{\text{eff}} = 10945.37$ ; R-1 = 0.06972

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.31 lensing: 9.22 lowl: -7.22 CamSpec: 7810.12 highL: 690.98 SN - SNLS: 427.86



### 6.30 base\_mnu\_planck\_tauprior

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022028	$0.02168 \pm 0.00036$	$\gamma^{\text{CIB}}$	0.559	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8465	$1.850 \pm 0.015$
$\Omega_c h^2$	0.12115	$0.1237 \pm 0.0032$	$c_{100}$	1.000587	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00002	$< 0.00706$
$100\theta_{\text{MC}}$	1.04116	$1.04061 \pm 0.00074$	$c_{217}$	0.99646	$0.9965 \pm 0.0014$	Age/Gyr	13.800	$14.09^{+0.16}_{-0.30}$
$\tau$	0.0908	$0.094 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.262	$< 0.619$	$z_*$	1090.55	$1091.41^{+0.74}_{-0.96}$
$\Sigma m_\nu$	0.002	$< 0.657$	$A^{\text{kSZ}}$	0.8	—	$r_*$	144.39	$143.79^{+0.87}_{-0.73}$
$n_s$	0.9591	$0.947^{+0.012}_{-0.0095}$	$\beta_1^1$	0.72	$0.62 \pm 0.56$	$100\theta_*$	1.04130	$1.04097 \pm 0.00067$
$\ln(10^{10} A_s)$	3.0975	$3.106 \pm 0.025$	$\Omega_\Lambda$	0.683	$0.599^{+0.093}_{-0.040}$	$z_{\text{drag}}$	1059.28	$1058.77 \pm 0.64$
$A_{100}^{\text{PS}}$	164	$185 \pm 60$	$\Omega_m$	0.317	$0.401^{+0.040}_{-0.093}$	$r_{\text{drag}}$	147.17	$146.67^{+0.81}_{-0.70}$
$A_{143}^{\text{PS}}$	69.3	$57 \pm 10$	$\sigma_8$	0.849	$0.755^{+0.10}_{-0.053}$	$k_D$	0.14041	$0.14076^{+0.00070}_{-0.00083}$
$A_{217}^{\text{PS}}$	121.3	$105^{+20}_{-20}$	$z_{\text{re}}$	11.23	$11.8 \pm 1.1$	$100\theta_D$	0.161354	$0.16158 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	67.26	$62.0^{+5.3}_{-3.1}$	$z_{\text{eq}}$	3421	$3474 \pm 72$
$A_{217}^{\text{CIB}}$	25.2	$31^{+7}_{-10}$	$10^9 A_s$	2.214	$2.233 \pm 0.056$	$100\theta_{\text{eq}}$	0.8091	$0.800 \pm 0.013$
$A_{143}^{\text{tSZ}}$	5.13	—	$\Omega_m h^2$	0.1432	$0.1508^{+0.0047}_{-0.0079}$	$r_{\text{drag}}/D_V(0.57)$	0.07134	$0.0680^{+0.0033}_{-0.0021}$
$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.842$	$\Omega_m h^3$	0.09632	$0.0932^{+0.0034}_{-0.0017}$			
$r_{143 \times 217}^{\text{CIB}}$	0.625	$0.48^{+0.26}_{-0.22}$	$Y_P$	0.247693	$0.24754 \pm 0.00016$			

Best-fit  $\chi_{\text{eff}}^2 = 7797.36$ ; R-1 = 0.00570

$\chi_{\text{eff}}^2$ : CMB - CamSpec: 7796.85

### 6.31 base\_mnu\_planck\_tauprior\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021496	$0.02150^{+0.00033}_{-0.00041}$	$\gamma^{\text{CIB}}$	0.539	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8522	$1.852 \pm 0.013$
$\Omega_c h^2$	0.12503	$0.1249^{+0.0034}_{-0.0030}$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00852	$0.0097 \pm 0.0045$
$100\theta_{\text{MC}}$	1.04022	$1.04025^{+0.00071}_{-0.00079}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	14.268	$14.30^{+0.26}_{-0.17}$
$\tau$	0.0917	$0.096 \pm 0.012$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.620$	$z_*$	1091.85	$1091.9^{+1.0}_{-0.87}$
$\Sigma m_\nu$	0.792	$0.91 \pm 0.42$	$A^{\text{kSZ}}$	10.0	—	$r_*$	143.46	$143.33 \pm 0.86$
$n_s$	0.9416	$0.941 \pm 0.012$	$\beta_1^1$	0.71	$0.64 \pm 0.56$	$100\theta_*$	1.04072	$1.04075 \pm 0.00066$
$\ln(10^{10} A_s)$	3.1025	$3.112 \pm 0.024$	$\Omega_\Lambda$	0.552	$0.532 \pm 0.082$	$z_{\text{drag}}$	1058.52	$1058.60^{+0.59}_{-0.67}$
$A_{100}^{\text{PS}}$	155	$190 \pm 60$	$\Omega_m$	0.448	$0.468 \pm 0.082$	$r_{\text{drag}}$	146.39	$146.25 \pm 0.81$
$A_{143}^{\text{PS}}$	43.7	$58 \pm 10$	$\sigma_8$	0.693	$0.685^{+0.050}_{-0.076}$	$k_D$	0.14099	$0.14120^{+0.00082}_{-0.00092}$
$A_{217}^{\text{PS}}$	104.8	$105^{+20}_{-20}$	$z_{\text{re}}$	11.78	$12.2 \pm 1.1$	$100\theta_D$	0.161649	$0.16157 \pm 0.00036$
$A_{143}^{\text{CIB}}$	5.38	—	$H_0$	58.86	$58.3^{+3.3}_{-4.8}$	$z_{\text{eq}}$	3501	$3499^{+75}_{-67}$
$A_{217}^{\text{CIB}}$	28.0	$32^{+7}_{-10}$	$10^9 A_s$	2.225	$2.247 \pm 0.053$	$100\theta_{\text{eq}}$	0.7949	$0.796^{+0.011}_{-0.013}$
$A_{143}^{\text{tSZ}}$	6.61	—	$\Omega_m h^2$	0.1550	$0.1562^{+0.0076}_{-0.0064}$	$r_{\text{drag}}/D_V(0.57)$	0.06600	$0.0657^{+0.0020}_{-0.0031}$
$r_{143 \times 217}^{\text{PS}}$	0.879	$> 0.840$	$\Omega_m h^3$	0.09125	$0.0909^{+0.0021}_{-0.0028}$			
$r_{143 \times 217}^{\text{CIB}}$	0.346	$0.49^{+0.26}_{-0.20}$	$Y_P$	0.247461	$0.24746^{+0.00015}_{-0.00018}$			

Best-fit  $\chi_{\text{eff}}^2 = 7805.96$ ; R-1 = 0.00952

$\chi_{\text{eff}}^2$ : CMB - lensing: 6.50 CamSpec: 7798.79

### 6.32 base\_mnu\_planck\_tauprior\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021937	$0.02184 \pm 0.00030$	$\beta_1^1$	0.51	$0.48 \pm 0.55$	$\sigma_8$	0.8505	$0.794^{+0.069}_{-0.025}$
$\Omega_c h^2$	0.12245	$0.1230 \pm 0.0031$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.48 \pm 0.59$	$z_{\text{re}}$	11.51	$11.7 \pm 1.1$
$100\theta_{\text{MC}}$	1.04102	$1.04083 \pm 0.00069$	$A_{218}^{\text{PS, ACT}}$	75.58	$76.6 \pm 4.5$	$H_0$	66.57	$64.0^{+3.8}_{-1.8}$
$\tau$	0.0932	$0.095 \pm 0.012$	$A_{95}^{\text{PS, SPT}}$	7.27	$7.53^{+1.3}_{-1.6}$	$10^9 A_s$	2.226	$2.234 \pm 0.055$
$\Sigma m_\nu$	0.021	$< 0.337$	$A_{150}^{\text{PS, SPT}}$	9.74	$9.97 \pm 0.51$	$\Omega_m h^2$	0.14462	$0.1480^{+0.0033}_{-0.0057}$
$n_s$	0.9505	$0.9481 \pm 0.0086$	$A_{220}^{\text{PS, SPT}}$	72.57	$74.0 \pm 4.4$	$\Omega_m h^3$	0.09627	$0.0946^{+0.0023}_{-0.00085}$
$\ln(10^{10} A_s)$	3.1028	$3.106 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.833^{+0.11}_{-0.092}$	$Y_P$	0.247654	$0.24761^{+0.00014}_{-0.00013}$
$A_{100}^{\text{PS}}$	211	$222 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.551	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8473	$1.847 \pm 0.014$
$A_{143}^{\text{PS}}$	75.6	$76.8 \pm 8.3$	$r_{150 \times 220}^{\text{PS}}$	0.9094	$0.938 \pm 0.023$	$\Omega_\nu h^2$	0.00023	$< 0.00362$
$A_{217}^{\text{PS}}$	62.7	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.435	$0.44 \pm 0.19$	Age/Gyr	13.825	$13.973^{+0.078}_{-0.20}$
$A_{143}^{\text{CIB}}$	3.25	$3.22 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.85 \pm 0.20$	$z_*$	1090.79	$1091.04^{+0.60}_{-0.73}$
$A_{217}^{\text{CIB}}$	52.4	$49.2 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9900	$0.9902 \pm 0.0074$	$r_*$	144.13	$143.98 \pm 0.71$
$A_{143}^{\text{tSZ}}$	4.66	$2.40^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0006	$1.003 \pm 0.013$	$100\theta_*$	1.04117	$1.04110 \pm 0.00064$
$r_{143 \times 217}^{\text{PS}}$	0.828	$0.829 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9861	$0.9866 \pm 0.0072$	$z_{\text{drag}}$	1059.17	$1059.03 \pm 0.57$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9592	$0.962 \pm 0.010$	$r_{\text{drag}}$	146.93	$146.81 \pm 0.69$
$\gamma^{\text{CIB}}$	0.657	$0.630 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9810	$0.980 \pm 0.019$	$k_D$	0.14059	$0.14068 \pm 0.00070$
$c_{100}$	1.000586	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9822	$0.9842 \pm 0.0098$	$100\theta_D$	0.161427	$0.16148 \pm 0.00033$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0147	$1.022 \pm 0.023$	$z_{\text{eq}}$	3450	$3461 \pm 69$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.450$	$\Omega_\Lambda$	0.6737	$0.635^{+0.060}_{-0.023}$	$100\theta_{\text{eq}}$	0.8037	$0.802 \pm 0.012$
$A^{\text{kSZ}}$	1.63	$5.69^{+2.7}_{-1.8}$	$\Omega_m$	0.3263	$0.365^{+0.023}_{-0.060}$	$r_{\text{drag}}/D_V(0.57)$	0.07084	$0.0693^{+0.0025}_{-0.0013}$

Best-fit  $\chi_{\text{eff}}^2 = 8499.46$ ; R-1 = 0.00622

$\chi_{\text{eff}}^2$ : CMB - CamSpec: 7806.58 highL: 692.69

### 6.33 base\_mnu\_planck\_tauprior\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021630	$0.02173 \pm 0.00035$	$\beta_1^1$	0.57	$0.50 \pm 0.55$	$\sigma_8$	0.715	$0.728^{+0.078}_{-0.063}$
$\Omega_c h^2$	0.12462	$0.1234 \pm 0.0032$	$A_{148}^{\text{PS, ACT}}$	10.54	$10.52 \pm 0.58$	$z_{\text{re}}$	11.66	$12.0 \pm 1.2$
$100\theta_{\text{MC}}$	1.04035	$1.04056 \pm 0.00074$	$A_{218}^{\text{PS, ACT}}$	76.69	$76.6 \pm 4.4$	$H_0$	60.07	$61.1 \pm 4.0$
$\tau$	0.0914	$0.097 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.36	$7.55^{+1.3}_{-1.7}$	$10^9 A_s$	2.224	$2.241 \pm 0.055$
$\Sigma m_\nu$	0.665	$0.63^{+0.21}_{-0.59}$	$A_{150}^{\text{PS, SPT}}$	9.97	$10.00 \pm 0.52$	$\Omega_m h^2$	0.1534	$0.1520^{+0.0063}_{-0.0077}$
$n_s$	0.9435	$0.945^{+0.011}_{-0.0099}$	$A_{220}^{\text{PS, SPT}}$	73.81	$74.0 \pm 4.4$	$\Omega_m h^3$	0.09214	$0.0925^{+0.0030}_{-0.0021}$
$\ln(10^{10} A_s)$	3.1017	$3.109 \pm 0.024$	$r_{95 \times 150}^{\text{PS}}$	0.809	$0.837^{+0.11}_{-0.090}$	$Y_P$	0.247520	$0.24756 \pm 0.00015$
$A_{100}^{\text{PS}}$	223	$224 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.581	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8519	$1.847 \pm 0.013$
$A_{143}^{\text{PS}}$	79.5	$78.5 \pm 8.3$	$r_{150 \times 220}^{\text{PS}}$	0.9212	$0.937 \pm 0.024$	$\Omega_\nu h^2$	0.00714	$0.0068^{+0.0023}_{-0.0063}$
$A_{217}^{\text{PS}}$	65.5	$64^{+10}_{-10}$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.43 \pm 0.19$	Age/Gyr	14.194	$14.15^{+0.21}_{-0.26}$
$A_{143}^{\text{CIB}}$	3.04	$3.21 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.85 \pm 0.20$	$z_*$	1091.57	$1091.36^{+0.82}_{-0.94}$
$A_{217}^{\text{CIB}}$	49.6	$49.2^{+4.7}_{-5.5}$	$y_{148}^{\text{ACTs}}$	0.9888	$0.9896 \pm 0.0074$	$r_*$	143.56	$143.75 \pm 0.82$
$A_{143}^{\text{tSZ}}$	3.19	$2.34^{+0.98}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0011	$1.003 \pm 0.013$	$100\theta_*$	1.04080	$1.04096 \pm 0.00066$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.833 \pm 0.066$	$y_{148}^{\text{ACTe}}$	0.9849	$0.9859 \pm 0.0071$	$z_{\text{drag}}$	1058.75	$1058.91 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{217}^{\text{ACTe}}$	0.9597	$0.962 \pm 0.011$	$r_{\text{drag}}$	146.45	$146.61 \pm 0.78$
$\gamma^{\text{CIB}}$	0.624	$0.628 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9770	$0.979^{+0.018}_{-0.021}$	$k_D$	0.14099	$0.14091^{+0.00075}_{-0.00088}$
$c_{100}$	1.000589	$1.00060 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9805	$0.9830 \pm 0.0099$	$100\theta_D$	0.161545	$0.16145 \pm 0.00033$
$c_{217}$	0.99746	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0156	$1.020^{+0.022}_{-0.025}$	$z_{\text{eq}}$	3495	$3469 \pm 70$
$\xi^{\text{tSZ-CIB}}$	0.182	$< 0.454$	$\Omega_\Lambda$	0.575	$0.585^{+0.098}_{-0.054}$	$100\theta_{\text{eq}}$	0.7960	$0.801^{+0.012}_{-0.014}$
$A^{\text{kSZ}}$	4.29	$5.50^{+2.8}_{-1.7}$	$\Omega_m$	0.425	$0.415^{+0.054}_{-0.098}$	$r_{\text{drag}}/D_V(0.57)$	0.06673	$0.0674 \pm 0.0026$

Best-fit  $\chi_{\text{eff}}^2 = 8509.31$ ; R-1 = 0.03040

$\chi_{\text{eff}}^2$ : CMB - lensing: 6.97 CamSpec: 7808.10 highL: 694.01

## 7 mnu+Alens

### 7.1 base\_mnu\_Alens\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022483	$0.02228 \pm 0.00039$	$r_{143 \times 217}^{\text{CIB}}$	0.485	$0.39^{+0.19}_{-0.30}$	$Y_P$	0.247888	$0.24780 \pm 0.00016$
$\Omega_c h^2$	0.11707	$0.1176 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.539	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8292	$1.824 \pm 0.014$
$100\theta_{\text{MC}}$	1.04181	$1.04145 \pm 0.00073$	$c_{100}$	1.000596	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00020	$< 0.00757$
$\tau$	0.0949	$0.087^{+0.012}_{-0.014}$	$c_{217}$	0.99644	$0.9963 \pm 0.0014$	Age/Gyr	13.722	$14.01^{+0.18}_{-0.24}$
$\Sigma m_\nu$	0.018	$< 0.704$	$\xi^{\text{tSZ-CIB}}$	0.29	—	$z_*$	1089.62	$1090.08 \pm 0.77$
$A_L$	1.197	$1.30^{+0.13}_{-0.15}$	$A^{\text{kSZ}}$	0.00	$< 5.50$	$r_*$	145.10	$144.88 \pm 0.70$
$n_s$	0.9713	$0.9645 \pm 0.0096$	$\beta_1^1$	0.56	$0.42 \pm 0.57$	$100\theta_*$	1.04190	$1.04178 \pm 0.00068$
$\ln(10^{10} A_s)$	3.0963	$3.077 \pm 0.025$	$\Omega_\Lambda$	0.708	$0.642^{+0.067}_{-0.039}$	$z_{\text{drag}}$	1060.05	$1059.77 \pm 0.71$
$A_{100}^{\text{PS}}$	143	$158 \pm 60$	$\Omega_m$	0.292	$0.358^{+0.039}_{-0.067}$	$r_{\text{drag}}$	147.74	$147.57 \pm 0.66$
$A_{143}^{\text{PS}}$	60.1	$51 \pm 10$	$\sigma_8$	0.835	$0.716^{+0.081}_{-0.066}$	$k_D$	0.14016	$0.14032 \pm 0.00069$
$A_{217}^{\text{PS}}$	118.9	$107^{+20}_{-10}$	$z_{\text{re}}$	11.34	$10.8 \pm 1.1$	$100\theta_D$	0.160947	$0.16100 \pm 0.00040$
$A_{143}^{\text{CIB}}$	0.00	$< 9.69$	$H_0$	69.21	$64.2^{+4.1}_{-3.4}$	$z_{\text{eq}}$	3335	$3344 \pm 67$
$A_{217}^{\text{CIB}}$	23.7	$27^{+6}_{-8}$	$10^9 A_s$	2.212	$2.169^{+0.053}_{-0.059}$	$100\theta_{\text{eq}}$	0.8265	$0.826 \pm 0.013$
$A_{143}^{\text{tSZ}}$	5.68	—	$\Omega_m h^2$	0.1398	$0.1458^{+0.0047}_{-0.0059}$	$r_{\text{drag}}/D_V(0.57)$	0.07276	$0.0696^{+0.0026}_{-0.0023}$
$r_{143 \times 217}^{\text{PS}}$	0.918	$> 0.854$	$\Omega_m h^3$	0.09673	$0.0935^{+0.0026}_{-0.0019}$			

Best-fit  $\chi_{\text{eff}}^2 = 9801.00$ ; R-1 = 0.00447

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.26 lowl: -8.07 CamSpec: 7794.15

## 7.2 base\_mnu\_Alens\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022031	$0.02202 \pm 0.00034$	$r_{143 \times 217}^{\text{CIB}}$	0.532	$0.44 \pm 0.22$	$Y_P$	0.247694	$0.24769 \pm 0.00015$
$\Omega_c h^2$	0.11856	$0.1184^{+0.0029}_{-0.0032}$	$\gamma^{\text{CIB}}$	0.516	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8244	$1.823 \pm 0.014$
$100\theta_{\text{MC}}$	1.04109	$1.04110 \pm 0.00070$	$c_{100}$	1.000594	$1.00059 \pm 0.00041$	$\Omega_\nu h^2$	0.00926	$0.0093 \pm 0.0034$
$\tau$	0.0865	$0.085 \pm 0.013$	$c_{217}$	0.99627	$0.9964 \pm 0.0014$	Age/Gyr	14.204	$14.20^{+0.19}_{-0.14}$
$\Sigma m_\nu$	0.861	$0.87 \pm 0.32$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.60	$1090.62 \pm 0.73$
$A_L$	1.186	$1.186 \pm 0.083$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.64	$144.66 \pm 0.72$
$n_s$	0.9599	$0.9589 \pm 0.0094$	$\beta_1^1$	0.52	$0.42 \pm 0.57$	$100\theta_*$	1.04155	$1.04155 \pm 0.00066$
$\ln(10^{10} A_s)$	3.0769	$3.074 \pm 0.025$	$\Omega_\Lambda$	0.597	$0.595 \pm 0.053$	$z_{\text{drag}}$	1059.36	$1059.32 \pm 0.63$
$A_{100}^{\text{PS}}$	141	$167 \pm 60$	$\Omega_m$	0.403	$0.405 \pm 0.053$	$r_{\text{drag}}$	147.42	$147.44 \pm 0.68$
$A_{143}^{\text{PS}}$	47.9	$53 \pm 10$	$\sigma_8$	0.656	$0.658^{+0.043}_{-0.063}$	$k_D$	0.14039	$0.14038 \pm 0.00071$
$A_{217}^{\text{PS}}$	112.3	$105^{+20}_{-20}$	$z_{\text{re}}$	10.98	$10.9 \pm 1.1$	$100\theta_D$	0.161131	$0.16114 \pm 0.00036$
$A_{143}^{\text{CIB}}$	6.22	$< 11.2$	$H_0$	60.98	$61.1^{+2.6}_{-3.5}$	$z_{\text{eq}}$	3359	$3356^{+64}_{-71}$
$A_{217}^{\text{CIB}}$	29.8	$30^{+6}_{-9}$	$10^9 A_s$	2.169	$2.163 \pm 0.055$	$100\theta_{\text{eq}}$	0.8222	$0.823 \pm 0.013$
$A^{\text{tSZ}}_{143}$	9.38	—	$\Omega_m h^2$	0.14985	$0.1497 \pm 0.0048$	$r_{\text{drag}}/D_V(0.57)$	0.06752	$0.0677^{+0.0017}_{-0.0023}$
$r_{143 \times 217}^{\text{PS}}$	0.887	$> 0.841$	$\Omega_m h^3$	0.09138	$0.0914^{+0.0016}_{-0.0021}$			

Best-fit  $\chi^2_{\text{eff}} = 9810.53$ ; R-1 = 0.03078

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2015.24 lensing: 5.67 lowl: -8.25 CamSpec: 7797.03

### 7.3 base\_mnu\_Alens\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022490	$0.02251 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.446	$0.37^{+0.15}_{-0.33}$	$Y_P$	0.247891	$0.24790 \pm 0.00013$
$\Omega_c h^2$	0.11719	$0.1160^{+0.0025}_{-0.0022}$	$\gamma^{\text{CIB}}$	0.547	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8297	$1.820 \pm 0.012$
$100\theta_{\text{MC}}$	1.04173	$1.04185 \pm 0.00059$	$c_{100}$	1.000601	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00114	$< 0.00302$
$\tau$	0.0957	$0.088^{+0.012}_{-0.014}$	$c_{217}$	0.99631	$0.9963 \pm 0.0014$	Age/Gyr	13.767	$13.818^{+0.062}_{-0.075}$
$\Sigma m_\nu$	0.106	$< 0.281$	$\xi^{\text{tSZ-CIB}}$	0.35	—	$z_*$	1089.62	$1089.53 \pm 0.51$
$A_L$	1.222	$1.28^{+0.12}_{-0.15}$	$A^{\text{kSZ}}$	0.00	$< 5.16$	$r_*$	145.058	$145.34 \pm 0.49$
$n_s$	0.9713	$0.9708 \pm 0.0070$	$\beta_1^1$	0.61	$0.38 \pm 0.57$	$100\theta_*$	1.04188	$1.04205 \pm 0.00060$
$\ln(10^{10} A_s)$	3.0981	$3.077 \pm 0.026$	$\Omega_\Lambda$	0.6989	$0.693^{+0.014}_{-0.012}$	$z_{\text{drag}}$	1060.09	$1060.05 \pm 0.64$
$A_{100}^{\text{PS}}$	141	$153 \pm 60$	$\Omega_m$	0.3011	$0.307^{+0.012}_{-0.014}$	$r_{\text{drag}}$	147.696	$147.98 \pm 0.49$
$A_{143}^{\text{PS}}$	58.5	$49 \pm 10$	$\sigma_8$	0.8166	$0.776^{+0.050}_{-0.030}$	$k_D$	0.14022	$0.13996 \pm 0.00056$
$A_{217}^{\text{PS}}$	119.3	$107^{+20}_{-10}$	$z_{\text{re}}$	11.42	$10.7 \pm 1.1$	$100\theta_D$	0.160923	$0.16094 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.00	$< 9.35$	$H_0$	68.39	$67.8 \pm 1.1$	$z_{\text{eq}}$	3338	$3309 \pm 51$
$A_{217}^{\text{CIB}}$	23.5	$27^{+5}_{-8}$	$10^9 A_s$	2.215	$2.171^{+0.053}_{-0.060}$	$100\theta_{\text{eq}}$	0.8260	$0.8319^{+0.0097}_{-0.011}$
$A^{\text{tSZ}}_{143}$	6.10	—	$\Omega_m h^2$	0.14082	$0.1409 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07222	$0.07194 \pm 0.00072$
$r_{143 \times 217}^{\text{PS}}$	0.941	$> 0.858$	$\Omega_m h^3$	0.09630	$0.0955^{+0.0011}_{-0.00088}$			

Best-fit  $\chi^2_{\text{eff}} = 9802.30$ ; R-1 = 0.01241

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.78 DR7: 0.45 6DF: 0.06 CMB - lowLike: 2014.43 lowl: -8.23 CamSpec: 7794.23

## 7.4 base\_mnu\_Alens\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022760	$0.02275 \pm 0.00034$	$r_{143 \times 217}^{\text{CIB}}$	0.211	$0.36^{+0.12}_{-0.34}$	$Y_P$	0.248005	$0.24800 \pm 0.00014$
$\Omega_c h^2$	0.11439	$0.1139^{+0.0024}_{-0.0028}$	$\gamma^{\text{CIB}}$	0.521	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8176	$1.812^{+0.011}_{-0.013}$
$100\theta_{\text{MC}}$	1.04222	$1.04225 \pm 0.00064$	$c_{100}$	1.000611	$1.00061 \pm 0.00040$	$\Omega_\nu h^2$	0.00001	$< 0.00157$
$\tau$	0.0879	$0.090^{+0.013}_{-0.014}$	$c_{217}$	0.99618	$0.9962 \pm 0.0014$	Age/Gyr	13.664	$13.718^{+0.066}_{-0.082}$
$\Sigma m_\nu$	0.001	$< 0.146$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$z_*$	1089.05	$1089.03 \pm 0.57$
$A_L$	1.292	$1.31^{+0.12}_{-0.13}$	$A^{\text{kSZ}}$	0.00	$< 4.81$	$r_*$	145.60	$145.73 \pm 0.55$
$n_s$	0.9778	$0.9766 \pm 0.0077$	$\beta_1^1$	0.52	$0.32 \pm 0.56$	$100\theta_*$	1.04228	$1.04238 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0760	$3.077^{+0.025}_{-0.028}$	$\Omega_\Lambda$	0.7254	$0.717^{+0.020}_{-0.015}$	$z_{\text{drag}}$	1060.51	$1060.45 \pm 0.68$
$A_{100}^{\text{PS}}$	106	$150 \pm 60$	$\Omega_m$	0.2746	$0.283^{+0.015}_{-0.020}$	$r_{\text{drag}}$	148.16	$148.30 \pm 0.54$
$A_{143}^{\text{PS}}$	48.3	$47 \pm 10$	$\sigma_8$	0.8202	$0.793^{+0.034}_{-0.018}$	$k_D$	0.13993	$0.13978 \pm 0.00060$
$A_{217}^{\text{PS}}$	121.6	$106^{+20}_{-10}$	$z_{\text{re}}$	10.59	$10.7 \pm 1.1$	$100\theta_D$	0.160727	$0.16077 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.02	$< 9.20$	$H_0$	70.68	$69.9^{+1.7}_{-1.4}$	$z_{\text{eq}}$	3277	$3265^{+53}_{-61}$
$A_{217}^{\text{CIB}}$	21.6	$26^{+5}_{-8}$	$10^9 A_s$	2.167	$2.170^{+0.053}_{-0.063}$	$100\theta_{\text{eq}}$	0.8385	$0.841 \pm 0.012$
$A^{\text{tSZ}}_{143}$	8.84	—	$\Omega_m h^2$	0.13716	$0.1379^{+0.0023}_{-0.0027}$	$r_{\text{drag}}/D_V(0.57)$	0.07384	$0.0734^{+0.0012}_{-0.0010}$
$r_{143 \times 217}^{\text{PS}}$	0.960	$> 0.852$	$\Omega_m h^3$	0.09694	$0.09631^{+0.00096}_{-0.00075}$			

Best-fit  $\chi^2_{\text{eff}} = 9802.73$ ; R-1 = 0.04452

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.02 lowl: -8.86 CamSpec: 7795.03 Hubble - HST: 1.75



## 7.5 base\_mnu\_Alens\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022376	$0.02236 \pm 0.00035$	$\beta_1^1$	0.32	$0.25 \pm 0.56$	$z_{\text{re}}$	11.60	$10.7 \pm 1.1$
$\Omega_c h^2$	0.11767	$0.1171 \pm 0.0030$	$A_{148}^{\text{PS, ACT}}$	10.45	$10.61 \pm 0.59$	$H_0$	68.69	$65.0^{+4.0}_{-2.9}$
$100\theta_{\text{MC}}$	1.04169	$1.04158 \pm 0.00070$	$A_{218}^{\text{PS, ACT}}$	76.68	$77.0 \pm 4.6$	$10^9 A_s$	2.219	$2.162^{+0.052}_{-0.058}$
$\tau$	0.0974	$0.086 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.56	$7.82^{+1.4}_{-1.7}$	$\Omega_m h^2$	0.14048	$0.1447^{+0.0041}_{-0.0056}$
$\Sigma m_\nu$	0.040	$< 0.623$	$A_{150}^{\text{PS, SPT}}$	10.02	$10.21 \pm 0.53$	$\Omega_m h^3$	0.09650	$0.0939^{+0.0025}_{-0.0016}$
$A_L$	1.173	$1.31^{+0.12}_{-0.14}$	$A_{220}^{\text{PS, SPT}}$	73.50	$74.6 \pm 4.6$	$Y_P$	0.247842	$0.24783 \pm 0.00015$
$n_s$	0.9649	$0.9636 \pm 0.0086$	$r_{95 \times 150}^{\text{PS}}$	0.800	$0.830 \pm 0.088$	$10^9 A_s e^{-2\tau}$	1.8258	$1.820 \pm 0.013$
$\ln(10^{10} A_s)$	3.0994	$3.073 \pm 0.025$	$r_{95 \times 220}^{\text{PS}}$	0.550	$0.58^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00043	$< 0.00670$
$A_{100}^{\text{PS}}$	192	$203 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9082	$0.935 \pm 0.024$	Age/Gyr	13.748	$13.97^{+0.15}_{-0.23}$
$A_{143}^{\text{PS}}$	68.1	$69 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.420	$0.43 \pm 0.19$	$z_*$	1089.80	$1089.91 \pm 0.69$
$A_{217}^{\text{PS}}$	57.0	$56 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.84 \pm 0.20$	$r_*$	145.03	$145.00 \pm 0.67$
$A_{143}^{\text{CIB}}$	3.29	$3.27 \pm 0.84$	$y_{148}^{\text{ACTs}}$	0.9934	$0.9937 \pm 0.0074$	$100\theta_*$	1.04181	$1.04188 \pm 0.00066$
$A_{217}^{\text{CIB}}$	52.6	$50.3 \pm 5.1$	$y_{217}^{\text{ACTs}}$	1.0053	$1.008 \pm 0.013$	$z_{\text{drag}}$	1059.86	$1059.87 \pm 0.65$
$A_{143}^{\text{tSZ}}$	4.79	$2.66^{+1.3}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9898	$0.9902 \pm 0.0073$	$r_{\text{drag}}$	147.70	$147.68 \pm 0.64$
$r_{143 \times 217}^{\text{PS}}$	0.805	$0.814 \pm 0.075$	$y_{217}^{\text{ACTe}}$	0.9636	$0.966 \pm 0.010$	$k_D$	0.14012	$0.14024 \pm 0.00067$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.927$	$y_{95}^{\text{SPT}}$	0.9888	$0.988 \pm 0.020$	$100\theta_D$	0.161058	$0.16097 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.664	$0.650 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9893	$0.991 \pm 0.010$	$z_{\text{eq}}$	3346	$3333 \pm 65$
$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0197	$1.027 \pm 0.023$	$100\theta_{\text{eq}}$	0.8240	$0.828 \pm 0.013$
$c_{217}$	0.99732	$0.9973 \pm 0.0013$	$\Omega_\Lambda$	0.7023	$0.654^{+0.060}_{-0.033}$	$r_{\text{drag}}/D_V(0.57)$	0.07242	$0.0701^{+0.0026}_{-0.0020}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.352$	$\Omega_m$	0.2977	$0.346^{+0.033}_{-0.060}$			
$A^{\text{kSZ}}$	1.11	$4.74^{+2.7}_{-2.2}$	$\sigma_8$	0.832	$0.724^{+0.083}_{-0.056}$			

Best-fit  $\chi^2_{\text{eff}} = 10504.87$ ; R-1 = 0.00775

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.58 lowl: -7.04 CamSpec: 7807.50 highL: 689.75

## 7.6 base\_mnu\_Alens\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022097	$0.02214 \pm 0.00032$	$\beta_1^1$	0.31	$0.28 \pm 0.58$	$z_{\text{re}}$	9.57	$10.9^{+1.2}_{-1.1}$
$\Omega_c h^2$	0.11815	$0.1175 \pm 0.0030$	$A_{148}^{\text{PS, ACT}}$	10.47	$10.62 \pm 0.58$	$H_0$	61.88	$62.4^{+2.9}_{-3.3}$
$100\theta_{\text{MC}}$	1.04117	$1.04127 \pm 0.00068$	$A_{218}^{\text{PS, ACT}}$	76.76	$76.7 \pm 4.6$	$10^9 A_s$	2.103	$2.162 \pm 0.054$
$\tau$	0.0718	$0.087 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.54	$7.65^{+1.3}_{-1.7}$	$\Omega_m h^2$	0.14852	$0.1477 \pm 0.0047$
$\Sigma m_\nu$	0.770	$0.75 \pm 0.30$	$A_{150}^{\text{PS, SPT}}$	9.997	$10.15 \pm 0.52$	$\Omega_m h^3$	0.09191	$0.0921^{+0.0016}_{-0.0020}$
$A_L$	1.231	$1.199 \pm 0.084$	$A_{220}^{\text{PS, SPT}}$	73.83	$74.5 \pm 4.5$	$Y_P$	0.247723	$0.24774 \pm 0.00014$
$n_s$	0.9583	$0.9604 \pm 0.0087$	$r_{95 \times 150}^{\text{PS}}$	0.793	$0.839^{+0.11}_{-0.088}$	$10^9 A_s e^{-2\tau}$	1.8214	$1.818^{+0.013}_{-0.015}$
$\ln(10^{10} A_s)$	3.0458	$3.073 \pm 0.025$	$r_{95 \times 220}^{\text{PS}}$	0.552	$0.59 \pm 0.12$	$\Omega_\nu h^2$	0.00828	$0.0081 \pm 0.0033$
$A_{100}^{\text{PS}}$	207	$210^{+60}_{-50}$	$r_{150 \times 220}^{\text{PS}}$	0.9151	$0.936^{+0.022}_{-0.025}$	Age/Gyr	14.154	$14.13^{+0.18}_{-0.15}$
$A_{143}^{\text{PS}}$	74.1	$72.7 \pm 8.1$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43^{+0.17}_{-0.21}$	$z_*$	1090.43	$1090.32^{+0.65}_{-0.74}$
$A_{217}^{\text{PS}}$	61.0	$59^{+9}_{-10}$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.83^{+0.22}_{-0.19}$	$r_*$	144.78	$144.90 \pm 0.70$
$A_{143}^{\text{CIB}}$	3.05	$3.29 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9909	$0.9923 \pm 0.0075$	$100\theta_*$	1.04161	$1.04168 \pm 0.00065$
$A_{217}^{\text{CIB}}$	50.9	$49.9 \pm 5.1$	$y_{217}^{\text{ACTs}}$	1.0034	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.44	$1059.49 \pm 0.60$
$A_{143}^{\text{tSZ}}$	3.83	$2.56^{+1.2}_{-1.7}$	$y_{148}^{\text{ACTe}}$	0.9871	$0.9884^{+0.0068}_{-0.0079}$	$r_{\text{drag}}$	147.53	$147.65 \pm 0.67$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.824 \pm 0.072$	$y_{217}^{\text{ACTe}}$	0.9618	$0.964 \pm 0.010$	$k_D$	0.14029	$0.14020 \pm 0.00070$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{95}^{\text{SPT}}$	0.9827	$0.985 \pm 0.020$	$100\theta_D$	0.161117	$0.16109 \pm 0.00034$
$\gamma^{\text{CIB}}$	0.642	$0.643 \pm 0.080$	$y_{150}^{\text{SPT}}$	0.9849	$0.9880 \pm 0.0097$	$z_{\text{eq}}$	3351	$3336 \pm 66$
$c_{100}$	1.000596	$1.00057 \pm 0.00041$	$y_{220}^{\text{SPT}}$	1.0181	$1.024^{+0.021}_{-0.025}$	$100\theta_{\text{eq}}$	0.8236	$0.827 \pm 0.013$
$c_{217}$	0.99725	$0.9973 \pm 0.0014$	$\Omega_\Lambda$	0.612	$0.617^{+0.053}_{-0.046}$	$r_{\text{drag}}/D_V(0.57)$	0.06810	$0.0685^{+0.0018}_{-0.0022}$
$\xi^{\text{tSZ-CIB}}$	0.074	$< 0.388$	$\Omega_m$	0.388	$0.383^{+0.046}_{-0.053}$			
$A^{\text{kSZ}}$	2.97	$4.99^{+2.6}_{-2.1}$	$\sigma_8$	0.659	$0.674^{+0.043}_{-0.064}$			

Best-fit  $\chi_{\text{eff}}^2 = 10513.82$ ; R-1 = 0.08854

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2016.35 lensing: 6.11 lowl: -8.41 CamSpec: 7807.90 highL: 691.71

## 7.7 base\_mnu\_Alens\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022387	$0.02251 \pm 0.00029$	$\beta_1^1$	0.36	$0.22 \pm 0.56$	$z_{\text{re}}$	11.61	$10.6 \pm 1.1$
$\Omega_c h^2$	0.11770	$0.1159 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.45	$10.65 \pm 0.59$	$H_0$	68.47	$67.9^{+1.1}_{-1.0}$
$100\theta_{\text{MC}}$	1.04168	$1.04187 \pm 0.00059$	$A_{218}^{\text{PS, ACT}}$	76.24	$77.1 \pm 4.6$	$10^9 A_s$	2.219	$2.162^{+0.050}_{-0.057}$
$\tau$	0.0975	$0.087^{+0.012}_{-0.013}$	$A_{95}^{\text{PS, SPT}}$	7.55	$7.91^{+1.4}_{-1.7}$	$\Omega_m h^2$	0.14078	$0.1408^{+0.0016}_{-0.0018}$
$\Sigma m_\nu$	0.064	$0.221^{+0.066}_{-0.21}$	$A_{150}^{\text{PS, SPT}}$	10.01	$10.29 \pm 0.52$	$\Omega_m h^3$	0.09640	$0.0955^{+0.0011}_{-0.00083}$
$A_L$	1.180	$1.29^{+0.12}_{-0.14}$	$A_{220}^{\text{PS, SPT}}$	72.99	$74.7 \pm 4.6$	$Y_P$	0.247847	$0.24790 \pm 0.00012$
$n_s$	0.9650	$0.9682 \pm 0.0065$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.830 \pm 0.088$	$10^9 A_s e^{-2\tau}$	1.8260	$1.817 \pm 0.011$
$\ln(10^{10} A_s)$	3.0997	$3.073 \pm 0.025$	$r_{95 \times 220}^{\text{PS}}$	0.559	$0.58^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00069	$0.00238^{+0.00070}_{-0.0023}$
$A_{100}^{\text{PS}}$	193	$199 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9091	$0.935 \pm 0.023$	Age/Gyr	13.760	$13.816^{+0.060}_{-0.075}$
$A_{143}^{\text{PS}}$	68.0	$67 \pm 8$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	$z_*$	1089.794	$1089.51 \pm 0.48$
$A_{217}^{\text{PS}}$	56.0	$54 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.839	$0.84 \pm 0.20$	$r_*$	145.008	$145.36 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.34	$3.28 \pm 0.84$	$y_{148}^{\text{ACTs}}$	0.9936	$0.9947 \pm 0.0073$	$100\theta_*$	1.04182	$1.04207 \pm 0.00060$
$A_{217}^{\text{CIB}}$	53.4	$50.6 \pm 5.1$	$y_{217}^{\text{ACTs}}$	1.0056	$1.009 \pm 0.013$	$z_{\text{drag}}$	1059.89	$1060.06 \pm 0.61$
$A_{143}^{\text{tSZ}}$	4.94	$2.72^{+1.4}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9902	$0.9911 \pm 0.0072$	$r_{\text{drag}}$	147.677	$148.00 \pm 0.49$
$r_{143 \times 217}^{\text{PS}}$	0.813	$0.812 \pm 0.077$	$y_{217}^{\text{ACTe}}$	0.9637	$0.967 \pm 0.010$	$k_D$	0.14016	$0.13994 \pm 0.00056$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.925$	$y_{95}^{\text{SPT}}$	0.9884	$0.990 \pm 0.020$	$100\theta_D$	0.161041	$0.16094 \pm 0.00034$
$\gamma^{\text{CIB}}$	0.675	$0.656 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9894	$0.9931 \pm 0.0098$	$z_{\text{eq}}$	3347	$3307 \pm 50$
$c_{100}$	1.000579	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0199	$1.028 \pm 0.023$	$100\theta_{\text{eq}}$	0.8238	$0.832 \pm 0.010$
$c_{217}$	0.99734	$0.9973 \pm 0.0013$	$\Omega_\Lambda$	0.6997	$0.694^{+0.014}_{-0.012}$	$r_{\text{drag}}/D_V(0.57)$	0.07227	$0.07198 \pm 0.00071$
$\xi^{\text{tSZ-CIB}}$	0.001	$< 0.329$	$\Omega_m$	0.3003	$0.306^{+0.012}_{-0.014}$			
$A^{\text{kSZ}}$	0.91	$4.48^{+2.6}_{-2.3}$	$\sigma_8$	0.8271	$0.774^{+0.048}_{-0.030}$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.22$ ; R-1 = 0.01599

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.38 DR9: 0.86 6DF: 0.07 CMB - lowLike: 2014.62 lowl: -7.11 CamSpec: 7807.62 highL: 689.70

## 7.8 base\_mnu\_Alens\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022662	$0.02272^{+0.00030}_{-0.00034}$	$\beta_1^1$	0.30	$0.15 \pm 0.55$	$z_{\text{re}}$	11.32	$10.7 \pm 1.1$
$\Omega_c h^2$	0.11467	$0.1139^{+0.0027}_{-0.0024}$	$A_{148}^{\text{PS, ACT}}$	10.48	$10.68 \pm 0.60$	$H_0$	70.47	$69.8 \pm 1.4$
$100\theta_{\text{MC}}$	1.04215	$1.04224 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	77.44	$77.3 \pm 4.6$	$10^9 A_s$	2.198	$2.163 \pm 0.055$
$\tau$	0.0962	$0.089^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.73	$7.99^{+1.4}_{-1.8}$	$\Omega_m h^2$	0.13734	$0.1379 \pm 0.0024$
$\Sigma m_\nu$	0.001	$< 0.147$	$A_{150}^{\text{PS, SPT}}$	10.18	$10.35 \pm 0.52$	$\Omega_m h^3$	0.09678	$0.09624^{+0.00091}_{-0.00070}$
$A_L$	1.241	$1.30 \pm 0.12$	$A_{220}^{\text{PS, SPT}}$	74.21	$74.8 \pm 4.6$	$Y_P$	0.247964	$0.24799^{+0.00013}_{-0.00014}$
$n_s$	0.9723	$0.9733^{+0.0071}_{-0.0081}$	$r_{95 \times 150}^{\text{PS}}$	0.787	$0.830 \pm 0.088$	$10^9 A_s e^{-2\tau}$	1.8138	$1.809 \pm 0.012$
$\ln(10^{10} A_s)$	3.0903	$3.074 \pm 0.025$	$r_{95 \times 220}^{\text{PS}}$	0.543	$0.58^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00001	$< 0.00158$
$A_{100}^{\text{PS}}$	191	$196 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9100	$0.934 \pm 0.024$	Age/Gyr	13.678	$13.723^{+0.062}_{-0.077}$
$A_{143}^{\text{PS}}$	64.6	$65 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.420	$0.43 \pm 0.19$	$z_*$	1089.19	$1089.07 \pm 0.54$
$A_{217}^{\text{PS}}$	55.3	$52 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.825	$0.84 \pm 0.20$	$r_*$	145.60	$145.74 \pm 0.55$
$A_{143}^{\text{CIB}}$	3.15	$3.30 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9953	$0.9955 \pm 0.0072$	$100\theta_*$	1.04222	$1.04237 \pm 0.00060$
$A_{217}^{\text{CIB}}$	52.0	$50.9^{+4.9}_{-5.4}$	$y_{217}^{\text{ACTs}}$	1.0073	$1.010 \pm 0.014$	$z_{\text{drag}}$	1060.31	$1060.38 \pm 0.64$
$A_{143}^{\text{tSZ}}$	4.66	$2.78^{+1.3}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9915	$0.9922 \pm 0.0072$	$r_{\text{drag}}$	148.19	$148.32 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.787	$0.809 \pm 0.079$	$y_{217}^{\text{ACTe}}$	0.9654	$0.969 \pm 0.011$	$k_D$	0.13982	$0.13973 \pm 0.00059$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.923$	$y_{95}^{\text{SPT}}$	0.9927	$0.992^{+0.020}_{-0.022}$	$100\theta_D$	0.160838	$0.16081 \pm 0.00034$
$\gamma^{\text{CIB}}$	0.664	$0.660 \pm 0.080$	$y_{150}^{\text{SPT}}$	0.9924	$0.9953 \pm 0.0099$	$z_{\text{eq}}$	3282	$3265 \pm 56$
$c_{100}$	1.000587	$1.00061 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0216	$1.029 \pm 0.023$	$100\theta_{\text{eq}}$	0.8373	$0.841^{+0.011}_{-0.012}$
$c_{217}$	0.99734	$0.9973 \pm 0.0014$	$\Omega_\Lambda$	0.7234	$0.716^{+0.018}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07372	$0.0733 \pm 0.0010$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.302$	$\Omega_m$	0.2766	$0.284^{+0.015}_{-0.018}$			
$A^{\text{kSZ}}$	1.35	$4.26 \pm 2.2$	$\sigma_8$	0.8258	$0.790^{+0.033}_{-0.018}$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.70$ ; R-1 = 0.04752

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.15 lowl: -8.22 CamSpec: 7809.58 highL: 689.14 Hubble - HST: 1.98

## 8 mnu+omegak

### 8.1 base\_mnu\_omegak\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022081	$0.02211 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.382	$0.41^{+0.21}_{-0.28}$	$Y_P$	0.247716	$0.24773 \pm 0.00015$
$\Omega_c h^2$	0.12058	$0.1195 \pm 0.0029$	$\gamma^{\text{CIB}}$	0.549	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8429	$1.832 \pm 0.013$
$100\theta_{\text{MC}}$	1.04118	$1.04119 \pm 0.00071$	$c_{100}$	1.000598	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00671$
$\tau$	0.0922	$0.086 \pm 0.013$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.85	$15.70^{+0.81}_{-1.1}$
$\Omega_K$	-0.0012	$-0.063^{+0.055}_{-0.022}$	$\xi^{\text{tSZ-CIB}}$	0.54	—	$z_*$	1090.44	$1090.44^{+0.66}_{-0.79}$
$\Sigma m_\nu$	0.000	$< 0.624$	$A^{\text{kSZ}}$	0.24	$< 5.87$	$r_*$	144.50	$144.58^{+0.72}_{-0.64}$
$n_s$	0.9629	$0.9597^{+0.0095}_{-0.0084}$	$\beta_1^1$	0.67	$0.49 \pm 0.57$	$100\theta_*$	1.04131	$1.04150 \pm 0.00066$
$\ln(10^{10} A_s)$	3.0984	$3.080 \pm 0.025$	$\Omega_\Lambda$	0.683	$0.426^{+0.22}_{-0.087}$	$z_{\text{drag}}$	1059.40	$1059.46 \pm 0.66$
$A_{100}^{\text{PS}}$	154	$165 \pm 60$	$\Omega_m$	0.318	$0.64^{+0.11}_{-0.28}$	$r_{\text{drag}}$	147.26	$147.33 \pm 0.64$
$A_{143}^{\text{PS}}$	66.2	$52 \pm 10$	$\sigma_8$	0.849	$0.706^{+0.10}_{-0.062}$	$k_D$	0.14036	$0.14041^{+0.00066}_{-0.00073}$
$A_{217}^{\text{PS}}$	123.6	$107^{+20}_{-10}$	$z_{\text{re}}$	11.32	$10.7 \pm 1.1$	$100\theta_D$	0.161298	$0.16118 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.0	$< 10.1$	$H_0$	67.0	$50 \pm 8$	$z_{\text{eq}}$	3409	$3383 \pm 63$
$A_{217}^{\text{CIB}}$	23.6	$28^{+6}_{-9}$	$10^9 A_s$	2.216	$2.177 \pm 0.054$	$100\theta_{\text{eq}}$	0.8114	$0.817 \pm 0.012$
$A_{143}^{\text{tSZ}}$	5.13	—	$\Omega_m h^2$	0.1427	$0.1467^{+0.0043}_{-0.0061}$	$r_{\text{drag}}/D_V(0.57)$	0.0711	$0.0592 \pm 0.0052$
$r_{143 \times 217}^{\text{PS}}$	0.958	$> 0.853$	$\Omega_m h^3$	0.0955	$0.073 \pm 0.010$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.22$ ; R-1 = 0.00688

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.45 lowl: -6.89 CamSpec: 7797.09

## 8.2 base\_mnu\_omegak\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022145	$0.02222 \pm 0.00032$	$\beta_1^1$	0.49	$0.33 \pm 0.55$	$z_{\text{re}}$	11.58	$10.5 \pm 1.1$
$\Omega_c h^2$	0.12003	$0.1187 \pm 0.0028$	$A_{148}^{\text{PS, ACT}}$	10.34	$10.61 \pm 0.60$	$H_0$	66.3	$49_{-7}^{+8}$
$100\theta_{\text{MC}}$	1.04138	$1.04137 \pm 0.00069$	$A_{218}^{\text{PS, ACT}}$	76.31	$76.9 \pm 4.6$	$10^9 A_s$	2.222	$2.169_{-0.059}^{+0.051}$
$\tau$	0.0957	$0.085_{-0.014}^{+0.012}$	$A_{95}^{\text{PS, SPT}}$	7.43	$7.87_{-1.7}^{+1.4}$	$\Omega_m h^2$	0.14217	$0.1452_{-0.0056}^{+0.0037}$
$\Omega_K$	-0.0032	$-0.070_{-0.022}^{+0.055}$	$A_{150}^{\text{PS, SPT}}$	9.89	$10.20 \pm 0.52$	$\Omega_m h^3$	0.0943	$0.0713 \pm 0.0095$
$\Sigma m_\nu$	0.000	$< 0.499$	$A_{220}^{\text{PS, SPT}}$	73.07	$74.5 \pm 4.5$	$Y_P$	0.247744	$0.24777 \pm 0.00014$
$n_s$	0.9596	$0.9596 \pm 0.0078$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.830 \pm 0.088$	$10^9 A_s e^{-2\tau}$	1.8348	$1.828 \pm 0.012$
$\ln(10^{10} A_s)$	3.1010	$3.077 \pm 0.025$	$r_{95 \times 220}^{\text{PS}}$	0.543	$0.58_{-0.13}^{+0.11}$	$\Omega_\nu h^2$	0.00000	$< 0.00536$
$A_{100}^{\text{PS}}$	205	$208 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9115	$0.935_{-0.026}^{+0.023}$	Age/Gyr	13.93	$15.86_{-1.1}^{+0.78}$
$A_{143}^{\text{PS}}$	70.7	$71 \pm 8$	$A_{\text{dust}}^{\text{ACTs}}$	0.432	$0.43 \pm 0.19$	$z_*$	1090.31	$1090.20_{-0.70}^{+0.60}$
$A_{217}^{\text{PS}}$	59.7	$57 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.84 \pm 0.20$	$r_*$	144.59	$144.74 \pm 0.65$
$A_{143}^{\text{CIB}}$	3.12	$3.27 \pm 0.84$	$y_{148}^{\text{ACTs}}$	0.9921	$0.9930 \pm 0.0074$	$100\theta_*$	1.04150	$1.04165 \pm 0.00065$
$A_{217}^{\text{CIB}}$	52.1	$50.2 \pm 5.1$	$y_{217}^{\text{ACTs}}$	1.0037	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.47	$1059.64 \pm 0.61$
$A_{143}^{\text{tSZ}}$	4.55	$2.59_{-1.8}^{+1.2}$	$y_{148}^{\text{ACTe}}$	0.9885	$0.9894 \pm 0.0073$	$r_{\text{drag}}$	147.33	$147.46 \pm 0.63$
$r_{143 \times 217}^{\text{PS}}$	0.809	$0.818 \pm 0.074$	$y_{217}^{\text{ACTe}}$	0.9618	$0.965 \pm 0.010$	$k_D$	0.14033	$0.14034 \pm 0.00067$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.926$	$y_{95}^{\text{SPT}}$	0.9853	$0.986 \pm 0.020$	$100\theta_D$	0.161253	$0.16111 \pm 0.00034$
$\gamma^{\text{CIB}}$	0.663	$0.648 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9863	$0.990 \pm 0.010$	$z_{\text{eq}}$	3397	$3368 \pm 62$
$c_{100}$	1.000578	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0173	$1.026 \pm 0.023$	$100\theta_{\text{eq}}$	0.8139	$0.820 \pm 0.012$
$c_{217}$	0.99736	$0.9973 \pm 0.0013$	$\Omega_\Lambda$	0.680	$0.426_{-0.082}^{+0.21}$	$r_{\text{drag}}/D_V(0.57)$	0.0706	$0.0585 \pm 0.0049$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.367$	$\Omega_m$	0.323	$0.64_{-0.27}^{+0.10}$			
$A^{\text{kSZ}}$	1.83	$4.75_{-2.2}^{+2.7}$	$\sigma_8$	0.846	$0.715_{-0.052}^{+0.097}$			

Best-fit  $\chi_{\text{eff}}^2 = 10507.83$ ; R-1 = 0.01164

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.82 lowl: -6.29 CamSpec: 7807.33 highL: 691.86

### 8.3 base\_mnu\_omegak\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022149	$0.02208 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.495	$0.43 \pm 0.23$	$Y_p$	0.247745	$0.24771 \pm 0.00013$
$\Omega_c h^2$	0.11919	$0.1191 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.546	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8370	$1.832 \pm 0.013$
$100\theta_{\text{MC}}$	1.04145	$1.04135 \pm 0.00066$	$c_{100}$	1.000598	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00175$
$\tau$	0.0938	$0.092^{+0.013}_{-0.014}$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	Age/Gyr	13.797	$13.77^{+0.15}_{-0.14}$
$\Omega_K$	-0.00054	$0.0016^{+0.0036}_{-0.0051}$	$\xi^{\text{tSZ-CIB}}$	0.51	—	$z_*$	1090.22	$1090.33^{+0.56}_{-0.64}$
$\Sigma m_\nu$	0.000	$< 0.162$	$A^{\text{kSZ}}$	0.4	—	$r_*$	144.81	$144.87 \pm 0.60$
$n_s$	0.9657	$0.9621 \pm 0.0077$	$\beta_1^1$	0.71	$0.54 \pm 0.57$	$100\theta_*$	1.04157	$1.04155 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0984	$3.091 \pm 0.025$	$\Omega_\Lambda$	0.6938	$0.686^{+0.016}_{-0.011}$	$z_{\text{drag}}$	1059.44	$1059.28 \pm 0.61$
$A_{100}^{\text{PS}}$	160	$172 \pm 60$	$\Omega_m$	0.3067	$0.312^{+0.011}_{-0.014}$	$r_{\text{drag}}$	147.55	$147.64 \pm 0.59$
$A_{143}^{\text{PS}}$	66.7	$54 \pm 10$	$\sigma_8$	0.8451	$0.810^{+0.037}_{-0.017}$	$k_D$	0.14010	$0.13997 \pm 0.00062$
$A_{217}^{\text{PS}}$	123.3	$106^{+20}_{-20}$	$z_{\text{re}}$	11.40	$11.3 \pm 1.1$	$100\theta_D$	0.161286	$0.16137 \pm 0.00035$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$H_0$	67.88	$67.7 \pm 1.1$	$z_{\text{eq}}$	3377	$3373 \pm 61$
$A_{217}^{\text{CIB}}$	23.6	$29^{+6}_{-9}$	$10^9 A_s$	2.216	$2.201^{+0.054}_{-0.060}$	$100\theta_{\text{eq}}$	0.8175	$0.818 \pm 0.012$
$A_{143}^{\text{tSZ}}$	5.05	—	$\Omega_m h^2$	0.14134	$0.1427^{+0.0026}_{-0.0037}$	$r_{\text{drag}}/D_V(0.57)$	0.07182	$0.07185 \pm 0.00079$
$r_{143 \times 217}^{\text{PS}}$	0.948	$> 0.850$	$\Omega_m h^3$	0.09595	$0.0966^{+0.0023}_{-0.0029}$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.65$ ; R-1 = 0.00790

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.29 DR7: 1.08 6DF: 0.02 CMB - lowLike: 2014.41 lowl: -7.30 CamSpec: 7797.55

#### 8.4 base\_mnu\_omegak\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022244	$0.02215 \pm 0.00029$	$\beta_1^1$	0.46	$0.37 \pm 0.55$	$z_{\text{re}}$	11.52	$11.3 \pm 1.1$
$\Omega_c h^2$	0.11936	$0.1186 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.35	$10.52 \pm 0.59$	$H_0$	68.22	$67.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04163	$1.04147 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	76.42	$77.0 \pm 4.5$	$10^9 A_s$	2.218	$2.200^{+0.052}_{-0.061}$
$\tau$	0.0955	$0.093^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.50	$7.66^{+1.4}_{-1.7}$	$\Omega_m h^2$	0.14163	$0.1419^{+0.0026}_{-0.0032}$
$\Omega_K$	-0.00001	$0.0003^{+0.0036}_{-0.0042}$	$A_{150}^{\text{PS, SPT}}$	9.89	$10.07 \pm 0.51$	$\Omega_m h^3$	0.09662	$0.0959 \pm 0.0024$
$\Sigma m_\nu$	0.002	$< 0.125$	$A_{220}^{\text{PS, SPT}}$	73.23	$74.4 \pm 4.5$	$Y_P$	0.247786	$0.24774 \pm 0.00013$
$n_s$	0.9617	$0.9611 \pm 0.0072$	$r_{95 \times 150}^{\text{PS}}$	0.785	$0.830 \pm 0.090$	$10^9 A_s e^{-2\tau}$	1.8325	$1.828 \pm 0.012$
$\ln(10^{10} A_s)$	3.0994	$3.091^{+0.024}_{-0.027}$	$r_{95 \times 220}^{\text{PS}}$	0.537	$0.58^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00002	$< 0.00134$
$A_{100}^{\text{PS}}$	201	$213 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9112	$0.937 \pm 0.023$	Age/Gyr	13.758	$13.81 \pm 0.14$
$A_{143}^{\text{PS}}$	70.1	$73 \pm 8$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.12	$1090.19 \pm 0.56$
$A_{217}^{\text{PS}}$	58.8	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.85 \pm 0.20$	$r_*$	144.69	$144.95 \pm 0.59$
$A_{143}^{\text{CIB}}$	3.12	$3.23 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9927	$0.9922 \pm 0.0073$	$100\theta_*$	1.04174	$1.04164 \pm 0.00063$
$A_{217}^{\text{CIB}}$	52.2	$49.5 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0041	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.67	$1059.40 \pm 0.58$
$A_{143}^{\text{tSZ}}$	4.53	$2.49^{+1.1}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9889	$0.9886 \pm 0.0072$	$r_{\text{drag}}$	147.40	$147.70 \pm 0.58$
$r_{143 \times 217}^{\text{PS}}$	0.810	$0.821^{+0.071}_{-0.079}$	$y_{217}^{\text{ACTe}}$	0.9625	$0.964 \pm 0.010$	$k_D$	0.14034	$0.13995 \pm 0.00060$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{95}^{\text{SPT}}$	0.9860	$0.984 \pm 0.019$	$100\theta_D$	0.161174	$0.16131 \pm 0.00033$
$\gamma^{\text{CIB}}$	0.662	$0.637 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9867	$0.9878 \pm 0.0098$	$z_{\text{eq}}$	3384	$3363 \pm 60$
$c_{100}$	1.000587	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0180	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8168	$0.820 \pm 0.012$
$c_{217}$	0.99744	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.6957	$0.689^{+0.014}_{-0.011}$	$r_{\text{drag}}/D_V(0.57)$	0.07202	$0.07175 \pm 0.00080$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.422$	$\Omega_m$	0.3043	$0.311^{+0.011}_{-0.013}$			
$A^{\text{kSZ}}$	1.91	$5.43^{+2.7}_{-1.9}$	$\sigma_8$	0.8446	$0.816^{+0.028}_{-0.016}$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.98$ ; R-1 = 0.01708

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.74 DR9: 0.51 6DF: 0.04 CMB - lowLike: 2014.53 lowl: -6.41 CamSpec: 7808.53 highL: 691.94



## 8.5 base\_mnu\_omegak\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022181	$0.02217 \pm 0.00030$	$\beta_1^1$	0.53	$0.36 \pm 0.55$	$z_{\text{re}}$	11.64	$11.3 \pm 1.1$
$\Omega_c h^2$	0.11912	$0.1187 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.51 \pm 0.59$	$H_0$	68.86	$68.60 \pm 0.96$
$100\theta_{\text{MC}}$	1.04158	$1.04148 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	75.91	$76.9 \pm 4.6$	$10^9 A_s$	2.221	$2.201^{+0.053}_{-0.062}$
$\tau$	0.0967	$0.093^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.03	$7.66^{+1.4}_{-1.7}$	$\Omega_m h^2$	0.14130	$0.1419^{+0.0025}_{-0.0031}$
$\Omega_K$	0.00124	$0.0020^{+0.0033}_{-0.0038}$	$A_{150}^{\text{PS, SPT}}$	9.722	$10.07 \pm 0.50$	$\Omega_m h^3$	0.09731	$0.0973 \pm 0.0023$
$\Sigma m_\nu$	0.000	$< 0.108$	$A_{220}^{\text{PS, SPT}}$	72.68	$74.5 \pm 4.5$	$Y_P$	0.247759	$0.24775 \pm 0.00013$
$n_s$	0.9610	$0.9611 \pm 0.0072$	$r_{95 \times 150}^{\text{PS}}$	0.828	$0.830 \pm 0.090$	$10^9 A_s e^{-2\tau}$	1.8306	$1.828 \pm 0.012$
$\ln(10^{10} A_s)$	3.1006	$3.091 \pm 0.026$	$r_{95 \times 220}^{\text{PS}}$	0.573	$0.58^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00000	$< 0.00116$
$A_{100}^{\text{PS}}$	214	$213 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9075	$0.937 \pm 0.024$	Age/Gyr	13.704	$13.71 \pm 0.13$
$A_{143}^{\text{PS}}$	72.3	$72 \pm 8$	$A_{\text{dust}}^{\text{ACTs}}$	0.431	$0.43^{+0.18}_{-0.21}$	$z_*$	1090.18	$1090.17 \pm 0.56$
$A_{217}^{\text{PS}}$	59.7	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.817	$0.84 \pm 0.20$	$r_*$	144.80	$144.91 \pm 0.59$
$A_{143}^{\text{CIB}}$	3.47	$3.24 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9920	$0.9924 \pm 0.0074$	$100\theta_*$	1.04168	$1.04165 \pm 0.00064$
$A_{217}^{\text{CIB}}$	53.2	$49.6 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0035	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.51	$1059.45 \pm 0.59$
$A_{143}^{\text{tSZ}}$	4.96	$2.48^{+1.0}_{-2.0}$	$y_{148}^{\text{ACTe}}$	0.9876	$0.9887 \pm 0.0073$	$r_{\text{drag}}$	147.53	$147.65 \pm 0.58$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.820 \pm 0.071$	$y_{217}^{\text{ACTe}}$	0.9616	$0.964 \pm 0.010$	$k_D$	0.14015	$0.14002 \pm 0.00061$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{95}^{\text{SPT}}$	0.9846	$0.984 \pm 0.019$	$100\theta_D$	0.161260	$0.16129 \pm 0.00034$
$\gamma^{\text{CIB}}$	0.669	$0.638 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9847	$0.9879 \pm 0.0097$	$z_{\text{eq}}$	3376	$3366^{+58}_{-66}$
$c_{100}$	1.000597	$1.00060 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0195	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8178	$0.820 \pm 0.012$
$c_{217}$	0.99723	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.7008	$0.696^{+0.013}_{-0.010}$	$r_{\text{drag}}/D_V(0.57)$	0.07255	$0.07248 \pm 0.00072$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.426$	$\Omega_m$	0.2980	$0.302 \pm 0.010$			
$A^{\text{kSZ}}$	1.16	$5.44^{+2.8}_{-1.9}$	$\sigma_8$	0.8451	$0.820^{+0.025}_{-0.016}$			

Best-fit  $\chi_{\text{eff}}^2 = 10515.25$ ; R-1 = 0.03345

$\chi_{\text{eff}}^2$ : BAO - DR9: 1.36 DR7: 0.14 6DF: 0.13 CMB - lowLike: 2014.55 lowl: -6.05 CamSpec: 7808.16 highL: 692.68 Hubble - HST: 4.23

## 8.6 base\_mnu\_omegak\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022165	$0.02213 \pm 0.00031$	$r_{143 \times 217}^{\text{PS}}$	0.932	$> 0.850$	$Y_P$	0.247752	$0.24774 \pm 0.00013$
$\Omega_c h^2$	0.11882	$0.1184 \pm 0.0027$	$r_{143 \times 217}^{\text{CIB}}$	0.515	$0.43 \pm 0.23$	$10^9 A_s e^{-2\tau}$	1.8349	$1.829 \pm 0.013$
$100\theta_{\text{MC}}$	1.04143	$1.04146 \pm 0.00065$	$\gamma^{\text{CIB}}$	0.561	$0.53^{+0.13}_{-0.12}$	$\Omega_\nu h^2$	0.00000	$< 0.00137$
$\tau$	0.0944	$0.092 \pm 0.013$	$c_{100}$	1.000588	$1.00059 \pm 0.00040$	Age/Gyr	13.722	$13.70 \pm 0.41$
$\Omega_K$	0.0009	$0.0020^{+0.010}_{-0.0082}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	$z_*$	1090.17	$1090.20 \pm 0.59$
$\Sigma m_\nu$	0.000	$< 0.128$	$\xi^{\text{tSZ-CIB}}$	0.26	—	$r_*$	144.89	$145.00 \pm 0.60$
$n_s$	0.9658	$0.9636 \pm 0.0076$	$A^{\text{ksZ}}$	0.7	—	$100\theta_*$	1.04155	$1.04164 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0984	$3.091 \pm 0.025$	$\beta_1^1$	0.68	$0.51 \pm 0.56$	$z_{\text{drag}}$	1059.44	$1059.35 \pm 0.62$
$\alpha_{\text{SNLS}}$	1.418	$1.43 \pm 0.11$	$\Omega_\Lambda$	0.7009	$0.696^{+0.031}_{-0.027}$	$r_{\text{drag}}$	147.63	$147.76 \pm 0.59$
$\beta_{\text{SNLS}}$	3.247	$3.26 \pm 0.11$	$\Omega_m$	0.2981	$0.302^{+0.033}_{-0.039}$	$k_D$	0.14003	$0.13988 \pm 0.00062$
$A_{100}^{\text{PS}}$	151	$171 \pm 60$	$\sigma_8$	0.8445	$0.816^{+0.030}_{-0.018}$	$100\theta_D$	0.161272	$0.16134 \pm 0.00036$
$A_{143}^{\text{PS}}$	64.5	$53 \pm 10$	$z_{\text{re}}$	11.44	$11.3 \pm 1.1$	$z_{\text{eq}}$	3369	$3359 \pm 61$
$A_{217}^{\text{PS}}$	120.3	$106^{+20}_{-20}$	$H_0$	68.77	$68.9^{+3.8}_{-4.5}$	$100\theta_{\text{eq}}$	0.8191	$0.821 \pm 0.012$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$10^9 A_s$	2.216	$2.200 \pm 0.056$	$r_{\text{drag}}/D_V(0.57)$	0.07250	$0.0728^{+0.0029}_{-0.0035}$
$A_{217}^{\text{CIB}}$	24.9	$29^{+6}_{-9}$	$\Omega_m h^2$	0.14098	$0.1418^{+0.0027}_{-0.0033}$			
$A_{143}^{\text{tSZ}}$	5.93	—	$\Omega_m h^3$	0.0969	$0.0977^{+0.0060}_{-0.0069}$			

Best-fit  $\chi_{\text{eff}}^2 = 10228.76$ ; R-1 = 0.01130

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.33 lowl: -7.13 CamSpec: 7797.93 SN - SNLS: 423.15

## 8.7 base\_mnu\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022164	$0.02215 \pm 0.00030$	$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.852$	$Y_P$	0.247752	$0.24774 \pm 0.00013$
$\Omega_c h^2$	0.11850	$0.1183 \pm 0.0027$	$r_{143 \times 217}^{\text{CIB}}$	0.348	$0.43 \pm 0.22$	$10^9 A_s e^{-2\tau}$	1.8314	$1.829 \pm 0.013$
$100\theta_{\text{MC}}$	1.04136	$1.04148 \pm 0.00065$	$\gamma^{\text{CIB}}$	0.530	$0.53^{+0.13}_{-0.12}$	$\Omega_\nu h^2$	0.00002	$< 0.00132$
$\tau$	0.0958	$0.093^{+0.013}_{-0.015}$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	Age/Gyr	13.771	$13.77 \pm 0.14$
$\Omega_K$	-0.00004	$0.0010^{+0.0036}_{-0.0043}$	$c_{217}$	0.99633	$0.9964 \pm 0.0013$	$z_*$	1090.14	$1090.16 \pm 0.57$
$\Sigma m_\nu$	0.002	$< 0.123$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	144.98	$145.02 \pm 0.59$
$n_s$	0.9652	$0.9639 \pm 0.0075$	$A^{\text{kSZ}}$	0.01	$< 6.33$	$100\theta_*$	1.04148	$1.04166 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0993	$3.091 \pm 0.026$	$\beta_1^1$	0.62	$0.50 \pm 0.56$	$z_{\text{drag}}$	1059.44	$1059.38 \pm 0.61$
$\alpha_{\text{SNLS}}$	1.418	$1.43 \pm 0.11$	$\Omega_\Lambda$	0.6990	$0.693^{+0.013}_{-0.011}$	$r_{\text{drag}}$	147.72	$147.77 \pm 0.58$
$\beta_{\text{SNLS}}$	3.247	$3.26 \pm 0.11$	$\Omega_m$	0.3010	$0.306^{+0.010}_{-0.012}$	$k_D$	0.13994	$0.13988 \pm 0.00061$
$A_{100}^{\text{PS}}$	143	$171 \pm 60$	$\sigma_8$	0.8428	$0.816^{+0.029}_{-0.016}$	$100\theta_D$	0.161274	$0.16132 \pm 0.00035$
$A_{143}^{\text{PS}}$	55.1	$53 \pm 10$	$z_{\text{re}}$	11.55	$11.3 \pm 1.1$	$z_{\text{eq}}$	3361	$3357 \pm 60$
$A_{217}^{\text{PS}}$	118.4	$106^{+20}_{-20}$	$H_0$	68.36	$68.1 \pm 1.0$	$100\theta_{\text{eq}}$	0.8204	$0.822 \pm 0.012$
$A_{143}^{\text{CIB}}$	3.23	$< 10.8$	$10^9 A_s$	2.218	$2.201^{+0.053}_{-0.061}$	$r_{\text{drag}}/D_V(0.57)$	0.07220	$0.07213 \pm 0.00078$
$A_{217}^{\text{CIB}}$	26.6	$29^{+6}_{-9}$	$\Omega_m h^2$	0.14068	$0.1416^{+0.0026}_{-0.0032}$			
$A_{143}^{\text{tSZ}}$	7.92	—	$\Omega_m h^3$	0.09617	$0.0964 \pm 0.0025$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.07$ ; R-1 = 0.02235

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.46 6DF: 0.06 DR9: 0.76 CMB - lowLike: 2014.50 lowl: -7.12 CamSpec: 7797.33 SN - SNLS: 423.36

## 8.8 base\_mnu\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022278	$0.02207 \pm 0.00030$	$r_{143 \times 217}^{\text{PS}}$	0.899	$> 0.848$	$Y_P$	0.247801	$0.24771 \pm 0.00013$
$\Omega_c h^2$	0.11745	$0.1188 \pm 0.0027$	$r_{143 \times 217}^{\text{CIB}}$	0.555	$0.44 \pm 0.23$	$10^9 A_s e^{-2\tau}$	1.8282	$1.830 \pm 0.013$
$100\theta_{\text{MC}}$	1.04172	$1.04140 \pm 0.00063$	$\gamma^{\text{CIB}}$	0.529	$0.54 \pm 0.12$	$\Omega_\nu h^2$	0.00000	$< 0.00134$
$\tau$	0.0963	$0.092^{+0.013}_{-0.014}$	$c_{100}$	1.000594	$1.00059 \pm 0.00039$	Age/Gyr	13.494	$13.34 \pm 0.22$
$\Omega_K$	0.00477	$0.0094 \pm 0.0048$	$c_{217}$	0.99644	$0.9964 \pm 0.0014$	$z_*$	1089.91	$1090.31 \pm 0.57$
$\Sigma m_\nu$	0.000	$< 0.124$	$\xi^{\text{tSZ-CIB}}$	0.15	—	$r_*$	145.16	$144.96 \pm 0.60$
$n_s$	0.9696	$0.9627 \pm 0.0075$	$A^{\text{ksZ}}$	0.8	—	$100\theta_*$	1.04183	$1.04159 \pm 0.00061$
$\ln(10^{10} A_s)$	3.0985	$3.091 \pm 0.025$	$\beta_1^1$	0.63	$0.52 \pm 0.56$	$z_{\text{drag}}$	1059.63	$1059.23 \pm 0.60$
$\alpha_{\text{SNLS}}$	1.423	$1.43 \pm 0.11$	$\Omega_\Lambda$	0.7226	$0.720^{+0.017}_{-0.014}$	$r_{\text{drag}}$	147.87	$147.74 \pm 0.58$
$\beta_{\text{SNLS}}$	3.252	$3.26 \pm 0.11$	$\Omega_m$	0.2726	$0.270^{+0.016}_{-0.019}$	$k_D$	0.13987	$0.13986 \pm 0.00061$
$A_{100}^{\text{PS}}$	147	$173 \pm 60$	$\sigma_8$	0.8425	$0.822^{+0.029}_{-0.017}$	$100\theta_D$	0.161203	$0.16141 \pm 0.00035$
$A_{143}^{\text{PS}}$	63.7	$54 \pm 10$	$z_{\text{re}}$	11.55	$11.3 \pm 1.1$	$z_{\text{eq}}$	3339	$3366 \pm 60$
$A_{217}^{\text{PS}}$	122.0	$106^{+20}_{-20}$	$H_0$	71.59	$72.6 \pm 2.2$	$100\theta_{\text{eq}}$	0.8251	$0.820 \pm 0.012$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$10^9 A_s$	2.216	$2.201^{+0.053}_{-0.061}$	$r_{\text{drag}}/D_V(0.57)$	0.07467	$0.0756 \pm 0.0017$
$A_{217}^{\text{CIB}}$	23.8	$30^{+6}_{-9}$	$\Omega_m h^2$	0.13972	$0.1421^{+0.0026}_{-0.0033}$			
$A_{143}^{\text{tSZ}}$	6.10	—	$\Omega_m h^3$	0.10003	$0.1031 \pm 0.0037$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.21$ ; R-1 = 0.01815

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.12 lowl: -7.30 CamSpec: 7800.31 Hubble - HST: 0.88 SN - SNLS: 421.46

## 8.9 base\_mnu\_omegak\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022196	$0.02216 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.344	$0.42 \pm 0.22$	$Y_P$	0.247765	$0.24775 \pm 0.00014$
$\Omega_c h^2$	0.11919	$0.1186 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.552	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8375	$1.830 \pm 0.013$
$100\theta_{\text{MC}}$	1.04147	$1.04144 \pm 0.00065$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00170$
$\tau$	0.0948	$0.091 \pm 0.013$	$c_{217}$	0.99647	$0.9964 \pm 0.0014$	Age/Gyr	13.833	$14.15 \pm 0.43$
$\Omega_K$	-0.0014	$-0.008^{+0.012}_{-0.010}$	$\xi^{\text{tSZ-CIB}}$	0.75	—	$z_*$	1090.16	$1090.17 \pm 0.60$
$\Sigma m_\nu$	0.000	$< 0.158$	$A^{\text{kSZ}}$	0.72	$< 6.17$	$r_*$	144.77	$144.94 \pm 0.60$
$n_s$	0.9659	$0.9633 \pm 0.0076$	$\beta_1^1$	0.67	$0.50 \pm 0.56$	$100\theta_*$	1.04157	$1.04163 \pm 0.00062$
$\ln(10^{10} A_s)$	3.1006	$3.089 \pm 0.025$	$\Omega_\Lambda$	0.6911	$0.660^{+0.038}_{-0.032}$	$z_{\text{drag}}$	1059.55	$1059.44 \pm 0.63$
$A_{100}^{\text{PS}}$	159	$169 \pm 60$	$\Omega_m$	0.3103	$0.348^{+0.040}_{-0.047}$	$r_{\text{drag}}$	147.50	$147.69 \pm 0.58$
$A_{143}^{\text{PS}}$	66.0	$53 \pm 10$	$\sigma_8$	0.8454	$0.804^{+0.035}_{-0.019}$	$k_D$	0.14020	$0.13999 \pm 0.00061$
$A_{217}^{\text{PS}}$	122.7	$106^{+20}_{-10}$	$z_{\text{re}}$	11.47	$11.1 \pm 1.1$	$100\theta_D$	0.161221	$0.16128 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	67.51	$64.3^{+3.6}_{-4.4}$	$z_{\text{eq}}$	3379	$3363 \pm 61$
$A_{217}^{\text{CIB}}$	23.4	$29^{+6}_{-9}$	$10^9 A_s$	2.221	$2.195^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8174	$0.821 \pm 0.012$
$A^{\text{tSZ}}_{143}$	4.52	—	$\Omega_m h^2$	0.14139	$0.1422^{+0.0027}_{-0.0035}$	$r_{\text{drag}}/D_V(0.57)$	0.07151	$0.0693^{+0.0027}_{-0.0034}$
$r_{143 \times 217}^{\text{PS}}$	0.977	$> 0.850$	$\Omega_m h^3$	0.0954	$0.0914^{+0.0055}_{-0.0068}$			

Best-fit  $\chi^2_{\text{eff}} = 9935.44$ ; R-1 = 0.01479

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.52 lowl: -7.34 CamSpec: 7797.32 SN - Union2.1: 130.40

## 8.10 base\_mnu\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022129	$0.02211 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.309	$0.43 \pm 0.22$	$Y_p$	0.247737	$0.24773 \pm 0.00013$
$\Omega_c h^2$	0.11964	$0.1187 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.540	$0.53 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8384	$1.830 \pm 0.013$
$100\theta_{\text{MC}}$	1.04142	$1.04140 \pm 0.00063$	$c_{100}$	1.000588	$1.00060 \pm 0.00039$	$\Omega_\nu h^2$	0.00000	$< 0.00154$
$\tau$	0.0932	$0.092 \pm 0.013$	$c_{217}$	0.99646	$0.9965 \pm 0.0014$	Age/Gyr	13.759	$13.78 \pm 0.14$
$\Omega_K$	0.00035	$0.0011^{+0.0036}_{-0.0047}$	$\xi^{\text{tSZ-CIB}}$	0.14	—	$z_*$	1090.29	$1090.25 \pm 0.59$
$\Sigma m_\nu$	0.000	$< 0.143$	$A^{\text{kSZ}}$	0.5	—	$r_*$	144.71	$144.95 \pm 0.60$
$n_s$	0.9637	$0.9628 \pm 0.0076$	$\beta_1^1$	0.66	$0.52 \pm 0.56$	$100\theta_*$	1.04153	$1.04159^{+0.00057}_{-0.00063}$
$\ln(10^{10} A_s)$	3.0979	$3.091^{+0.024}_{-0.027}$	$\Omega_\Lambda$	0.6943	$0.689^{+0.014}_{-0.011}$	$z_{\text{drag}}$	1059.44	$1059.32 \pm 0.61$
$A_{100}^{\text{PS}}$	159	$171 \pm 60$	$\Omega_m$	0.3054	$0.310^{+0.011}_{-0.013}$	$r_{\text{drag}}$	147.45	$147.71 \pm 0.58$
$A_{143}^{\text{PS}}$	68.0	$53 \pm 10$	$\sigma_8$	0.8463	$0.813^{+0.032}_{-0.016}$	$k_D$	0.14019	$0.13992 \pm 0.00060$
$A_{217}^{\text{PS}}$	121.0	$105^{+20}_{-10}$	$z_{\text{re}}$	11.37	$11.3 \pm 1.1$	$100\theta_D$	0.161295	$0.16135 \pm 0.00035$
$A_{143}^{\text{CIB}}$	0.0	$< 11.3$	$H_0$	68.14	$67.8 \pm 1.0$	$z_{\text{eq}}$	3388	$3364 \pm 61$
$A_{217}^{\text{CIB}}$	24.9	$29^{+6}_{-9}$	$10^9 A_s$	2.215	$2.201^{+0.051}_{-0.061}$	$100\theta_{\text{eq}}$	0.8156	$0.820 \pm 0.012$
$A^{\text{tSZ}}_{143}$	5.33	—	$\Omega_m h^2$	0.14177	$0.1422^{+0.0028}_{-0.0034}$	$r_{\text{drag}}/D_V(0.57)$	0.07201	$0.07191 \pm 0.00078$
$r_{143 \times 217}^{\text{PS}}$	0.889	$> 0.845$	$\Omega_m h^3$	0.09660	$0.0964^{+0.0024}_{-0.0028}$			

Best-fit  $\chi^2_{\text{eff}} = 9936.96$ ; R-1 = 0.03199

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.78 6DF: 0.04 DR9: 0.49 CMB - lowLike: 2014.35 lowl: -6.83 CamSpec: 7797.20 SN - Union2.1: 130.29

### 8.11 base\_mnu\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022211	$0.02204 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.280	$0.45 \pm 0.22$	$Y_P$	0.247772	$0.24770 \pm 0.00013$
$\Omega_c h^2$	0.11842	$0.1193 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.538	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8317	$1.832 \pm 0.013$
$100\theta_{\text{MC}}$	1.04157	$1.04132^{+0.00058}_{-0.00068}$	$c_{100}$	1.000574	$1.00060 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00155$
$\tau$	0.0956	$0.091 \pm 0.013$	$c_{217}$	0.99640	$0.9965 \pm 0.0014$	Age/Gyr	13.471	$13.41 \pm 0.22$
$\Omega_K$	0.0056	$0.0085 \pm 0.0052$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.08	$1090.39 \pm 0.58$
$\Sigma m_\nu$	0.000	$< 0.144$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.96	$144.85 \pm 0.59$
$n_s$	0.9669	$0.9613 \pm 0.0073$	$\beta_1^1$	0.67	$0.51 \pm 0.56$	$100\theta_*$	1.04168	$1.04152^{+0.00055}_{-0.00067}$
$\ln(10^{10} A_s)$	3.0991	$3.091 \pm 0.025$	$\Omega_\Lambda$	0.7197	$0.712^{+0.018}_{-0.014}$	$z_{\text{drag}}$	1059.51	$1059.20 \pm 0.60$
$A_{100}^{\text{PS}}$	145	$175^{+60}_{-70}$	$\Omega_m$	0.2748	$0.279^{+0.016}_{-0.019}$	$r_{\text{drag}}$	147.69	$147.63 \pm 0.57$
$A_{143}^{\text{PS}}$	57.2	$54 \pm 10$	$\sigma_8$	0.8460	$0.819^{+0.031}_{-0.015}$	$k_D$	0.14001	$0.13994 \pm 0.00060$
$A_{217}^{\text{PS}}$	119.5	$105^{+20}_{-10}$	$z_{\text{re}}$	11.54	$11.3 \pm 1.1$	$100\theta_D$	0.161240	$0.16142 \pm 0.00035$
$A_{143}^{\text{CIB}}$	2.39	$< 11.3$	$H_0$	71.54	$71.6 \pm 2.2$	$z_{\text{eq}}$	3360	$3377 \pm 60$
$A_{217}^{\text{CIB}}$	26.0	$30^{+7}_{-9}$	$10^9 A_s$	2.218	$2.200^{+0.051}_{-0.058}$	$100\theta_{\text{eq}}$	0.8208	$0.818 \pm 0.012$
$A^{\text{tSZ}}_{143}$	7.60	—	$\Omega_m h^2$	0.14063	$0.1427 \pm 0.0030$	$r_{\text{drag}}/D_V(0.57)$	0.07462	$0.0748 \pm 0.0017$
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.845$	$\Omega_m h^3$	0.10061	$0.1021^{+0.0037}_{-0.0042}$			

Best-fit  $\chi^2_{\text{eff}} = 9938.26$ ; R-1 = 0.05903

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.11 lowl: -6.76 CamSpec: 7799.46 Hubble - HST: 0.92 SN - Union2.1: 129.88

## 8.12 base\_mnu\_omegak\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022228	$0.02205 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.050	$0.44 \pm 0.22$	$Y_P$	0.247779	$0.24770 \pm 0.00013$
$\Omega_c h^2$	0.11839	$0.1192 \pm 0.0028$	$\gamma^{\text{CIB}}$	0.538	$0.53 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8325	$1.832 \pm 0.013$
$100\theta_{\text{MC}}$	1.04156	$1.04134 \pm 0.00067$	$c_{100}$	1.000592	$1.00058 \pm 0.00039$	$\Omega_\nu h^2$	0.00000	$< 0.00157$
$\tau$	0.0965	$0.092^{+0.013}_{-0.014}$	$c_{217}$	0.99635	$0.9964 \pm 0.0014$	Age/Gyr	13.501	$13.41 \pm 0.23$
$\Omega_K$	0.0050	$0.0083 \pm 0.0054$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.06	$1090.38 \pm 0.59$
$\Sigma m_\nu$	0.000	$< 0.146$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.95	$144.85 \pm 0.61$
$n_s$	0.9674	$0.9617 \pm 0.0077$	$\beta_1^1$	0.67	$0.52 \pm 0.57$	$100\theta_*$	1.04167	$1.04154 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1012	$3.092 \pm 0.025$	$\Omega_\Lambda$	0.7179	$0.712^{+0.019}_{-0.016}$	$z_{\text{drag}}$	1059.55	$1059.21 \pm 0.61$
$A_{100}^{\text{PS}}$	142	$172 \pm 60$	$\Omega_m$	0.2772	$0.280^{+0.018}_{-0.021}$	$r_{\text{drag}}$	147.68	$147.63 \pm 0.59$
$A_{143}^{\text{PS}}$	61.0	$54 \pm 10$	$\sigma_8$	0.8466	$0.819^{+0.034}_{-0.017}$	$k_D$	0.14004	$0.13995 \pm 0.00062$
$A_{217}^{\text{PS}}$	123.2	$106^{+20}_{-20}$	$z_{\text{re}}$	11.61	$11.3 \pm 1.1$	$100\theta_D$	0.161215	$0.16141 \pm 0.00035$
$A_{143}^{\text{CIB}}$	0.7	$< 11.1$	$H_0$	71.23	$71.5 \pm 2.3$	$z_{\text{eq}}$	3360	$3376 \pm 62$
$A_{217}^{\text{CIB}}$	24.1	$29^{+6}_{-9}$	$10^9 A_s$	2.223	$2.202^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8210	$0.818 \pm 0.012$
$A_{143}^{\text{tSZ}}$	7.05	—	$\Omega_m h^2$	0.14062	$0.1427^{+0.0027}_{-0.0035}$	$r_{\text{drag}}/D_V(0.57)$	0.07438	$0.0748 \pm 0.0018$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.848$	$\Omega_m h^3$	0.10016	$0.1020 \pm 0.0040$			

Best-fit  $\chi_{\text{eff}}^2 = 9808.39$ ; R-1 = 0.00874

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.20 lowl: -6.86 CamSpec: 7799.21 Hubble - HST: 1.18



### 8.13 base\_mnu\_omegak\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022167	$0.02212 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.375	$0.43 \pm 0.23$	$Y_p$	0.247753	$0.24773 \pm 0.00013$
$\Omega_c h^2$	0.11846	$0.1190 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.533	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8324	$1.831 \pm 0.013$
$100\theta_{\text{MC}}$	1.04157	$1.04140 \pm 0.00066$	$c_{100}$	1.000599	$1.00059 \pm 0.00039$	$\Omega_\nu h^2$	0.00002	$< 0.00147$
$\tau$	0.0959	$0.092^{+0.012}_{-0.014}$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	Age/Gyr	13.765	$13.69 \pm 0.13$
$\Omega_K$	-0.00004	$0.0030^{+0.0034}_{-0.0045}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.14	$1090.27 \pm 0.57$
$\Sigma m_\nu$	0.002	$< 0.137$	$A^{\text{kSZ}}$	0.00	$< 6.27$	$r_*$	144.98	$144.86 \pm 0.59$
$n_s$	0.9642	$0.9624 \pm 0.0076$	$\beta_1^1$	0.62	$0.51 \pm 0.57$	$100\theta_*$	1.04168	$1.04158 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1000	$3.091^{+0.024}_{-0.027}$	$\Omega_\Lambda$	0.6998	$0.695^{+0.014}_{-0.010}$	$z_{\text{drag}}$	1059.44	$1059.36 \pm 0.59$
$A_{100}^{\text{PS}}$	150	$172 \pm 60$	$\Omega_m$	0.3002	$0.3024^{+0.0098}_{-0.012}$	$r_{\text{drag}}$	147.72	$147.62 \pm 0.58$
$A_{143}^{\text{PS}}$	54.4	$53 \pm 10$	$\sigma_8$	0.8428	$0.817^{+0.031}_{-0.016}$	$k_D$	0.13994	$0.14002 \pm 0.00060$
$A_{217}^{\text{PS}}$	116.9	$106^{+20}_{-20}$	$z_{\text{re}}$	11.56	$11.3 \pm 1.1$	$100\theta_D$	0.161302	$0.16133^{+0.00033}_{-0.00036}$
$A_{143}^{\text{CIB}}$	4.35	$< 10.9$	$H_0$	68.44	$68.66 \pm 0.97$	$z_{\text{eq}}$	3360	$3373^{+58}_{-65}$
$A_{217}^{\text{CIB}}$	27.6	$29^{+6}_{-9}$	$10^9 A_s$	2.220	$2.202^{+0.050}_{-0.060}$	$100\theta_{\text{eq}}$	0.8207	$0.819 \pm 0.012$
$A_{143}^{\text{tSZ}}$	7.63	—	$\Omega_m h^2$	0.14065	$0.1424^{+0.0026}_{-0.0034}$	$r_{\text{drag}}/D_V(0.57)$	0.07227	$0.07256 \pm 0.00074$
$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.847$	$\Omega_m h^3$	0.09627	$0.0978^{+0.0023}_{-0.0028}$			

Best-fit  $\chi_{\text{eff}}^2 = 9811.72$ ; R-1 = 0.03108

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.85 DR7: 0.39 6DF: 0.07 CMB - lowLike: 2014.50 lowl: -6.87 CamSpec: 7797.11 Hubble - HST: 4.97

## 9 nnu

### 9.1 base\_nnu\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022086	$0.02238 \pm 0.00041$	$r_{143 \times 217}^{\text{CIB}}$	0.631	$0.48^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.0967	$0.1051^{+0.0076}_{-0.0085}$
$\Omega_c h^2$	0.1208	$0.1256 \pm 0.0055$	$\gamma^{\text{CIB}}$	0.558	$0.54^{+0.13}_{-0.12}$	$Y_P$	0.2482	$0.2537 \pm 0.0050$
$100\theta_{\text{MC}}$	1.04123	$1.04080 \pm 0.00075$	$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8439	$1.861 \pm 0.025$
$\tau$	0.0913	$0.095^{+0.013}_{-0.016}$	$c_{217}$	0.99643	$0.9965 \pm 0.0014$	Age/Gyr	13.784	$13.38 \pm 0.37$
$N_{\text{eff}}$	3.080	$3.51 \pm 0.39$	$\xi^{\text{tSZ-CIB}}$	0.175	$< 0.614$	$z_*$	1090.49	$1090.93 \pm 0.67$
$n_s$	0.9637	$0.977 \pm 0.016$	$A^{\text{kSZ}}$	1.21	—	$r_*$	144.26	$140.9 \pm 3.2$
$\ln(10^{10} A_s)$	3.0972	$3.114^{+0.032}_{-0.037}$	$\beta_1^1$	0.73	$0.63 \pm 0.57$	$100\theta_*$	1.04136	$1.04064 \pm 0.00091$
$A_{100}^{\text{PS}}$	148	$185 \pm 60$	$\Omega_\Lambda$	0.6835	$0.702^{+0.023}_{-0.021}$	$z_{\text{drag}}$	1059.44	$1060.8 \pm 1.4$
$A_{143}^{\text{PS}}$	63.5	$57 \pm 10$	$\Omega_m$	0.3165	$0.298^{+0.021}_{-0.023}$	$r_{\text{drag}}$	147.01	$143.5 \pm 3.3$
$A_{217}^{\text{PS}}$	120.9	$105^{+20}_{-20}$	$\sigma_8$	0.8351	$0.848^{+0.020}_{-0.023}$	$k_D$	0.14049	$0.1430 \pm 0.0025$
$A_{143}^{\text{CIB}}$	0.0	$< 12.1$	$z_{\text{re}}$	11.27	$11.6 \pm 1.3$	$100\theta_D$	0.16142	$0.16236 \pm 0.00087$
$A_{217}^{\text{CIB}}$	24.8	$31^{+7}_{-10}$	$H_0$	67.34	$70.7 \pm 3.2$	$z_{\text{eq}}$	3399	$3332 \pm 78$
$A_{143}^{\text{tSZ}}$	6.43	—	$10^9 A_s$	2.213	$2.251^{+0.069}_{-0.085}$	$100\theta_{\text{eq}}$	0.8134	$0.827 \pm 0.016$
$r_{143 \times 217}^{\text{PS}}$	0.923	$> 0.844$	$\Omega_m h^2$	0.1435	$0.1486 \pm 0.0057$	$r_{\text{drag}}/D_V(0.57)$	0.07135	$0.0724 \pm 0.0012$

Best-fit  $\chi_{\text{eff}}^2 = 9805.57$ ; R-1 = 0.00903

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.38 lowl: -7.05 CamSpec: 7797.73

## 9.2 base\_nnu\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022270	$0.02242 \pm 0.00039$	$r_{143 \times 217}^{\text{CIB}}$	0.664	$0.47^{+0.26}_{-0.23}$	$\Omega_m h^3$	0.0972	$0.1028^{+0.0071}_{-0.0082}$
$\Omega_c h^2$	0.1190	$0.1228^{+0.0049}_{-0.0056}$	$\gamma^{\text{CIB}}$	0.606	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.24861	$0.2522 \pm 0.0049$
$100\theta_{\text{MC}}$	1.04140	$1.04106 \pm 0.00074$	$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8365	$1.849 \pm 0.024$
$\tau$	0.0932	$0.094^{+0.013}_{-0.016}$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	Age/Gyr	13.726	$13.47 \pm 0.36$
$N_{\text{eff}}$	3.106	$3.39 \pm 0.37$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$z_*$	1090.12	$1090.53 \pm 0.63$
$n_s$	0.9693	$0.976 \pm 0.015$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.45	$142.1 \pm 3.2$
$\ln(10^{10} A_s)$	3.0969	$3.105 \pm 0.033$	$\beta_1^1$	0.70	$0.56 \pm 0.57$	$100\theta_*$	1.04149	$1.04097 \pm 0.00091$
$A_{100}^{\text{PS}}$	159	$178 \pm 60$	$\Omega_\Lambda$	0.6975	$0.705 \pm 0.019$	$z_{\text{drag}}$	1059.74	$1060.6 \pm 1.4$
$A_{143}^{\text{PS}}$	63.9	$54 \pm 10$	$\Omega_m$	0.3025	$0.295 \pm 0.019$	$r_{\text{drag}}$	147.16	$144.7 \pm 3.3$
$A_{217}^{\text{PS}}$	115.0	$103^{+20}_{-20}$	$\sigma_8$	0.8299	$0.838^{+0.018}_{-0.021}$	$k_D$	0.14039	$0.1421 \pm 0.0024$
$A_{143}^{\text{CIB}}$	0.0	$< 11.9$	$z_{\text{re}}$	11.33	$11.4 \pm 1.2$	$100\theta_D$	0.16134	$0.16200 \pm 0.00084$
$A_{217}^{\text{CIB}}$	27.3	$31^{+6}_{-10}$	$H_0$	68.49	$70.4^{+2.9}_{-3.2}$	$z_{\text{eq}}$	3349	$3319 \pm 68$
$A^{\text{tSZ}}_{143}$	5.92	—	$10^9 A_s$	2.213	$2.231^{+0.068}_{-0.079}$	$100\theta_{\text{eq}}$	0.8231	$0.829 \pm 0.014$
$r_{143 \times 217}^{\text{PS}}$	0.943	$> 0.842$	$\Omega_m h^2$	0.1419	$0.1458^{+0.0051}_{-0.0058}$	$r_{\text{drag}}/D_V(0.57)$	0.07212	$0.0726^{+0.0010}_{-0.0012}$

Best-fit  $\chi^2_{\text{eff}} = 9815.89$ ; R-1 = 0.00980

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.32 lensing: 9.77 lowl: -7.89 CamSpec: 7799.48

### 9.3 base\_nnu\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022226	$0.02234 \pm 0.00039$	$\beta_1^1$	0.47	$0.46 \pm 0.55$	$\sigma_8$	0.8366	$0.842 \pm 0.020$
$\Omega_c h^2$	0.12236	$0.1236 \pm 0.0049$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.49 \pm 0.59$	$z_{\text{re}}$	11.35	$11.6 \pm 1.2$
$100\theta_{\text{MC}}$	1.04102	$1.04099 \pm 0.00073$	$A_{218}^{\text{PS, ACT}}$	76.64	$76.7 \pm 4.5$	$H_0$	68.63	$69.7 \pm 2.8$
$\tau$	0.0921	$0.095^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.38	$7.53^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.240^{+0.069}_{-0.081}$
$N_{\text{eff}}$	3.234	$3.36 \pm 0.34$	$A_{150}^{\text{PS, SPT}}$	9.91	$9.98 \pm 0.52$	$\Omega_m h^2$	0.1452	$0.1466 \pm 0.0051$
$n_s$	0.9658	$0.971 \pm 0.015$	$A_{220}^{\text{PS, SPT}}$	73.62	$74.1 \pm 4.4$	$\Omega_m h^3$	0.0997	$0.1023^{+0.0065}_{-0.0074}$
$\ln(10^{10} A_s)$	3.0997	$3.108 \pm 0.033$	$r_{95 \times 150}^{\text{PS}}$	0.797	$0.834 \pm 0.089$	$Y_p$	0.25027	$0.2519 \pm 0.0045$
$A_{100}^{\text{PS}}$	213	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.562	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8460	$1.851 \pm 0.023$
$A_{143}^{\text{PS}}$	75.2	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9182	$0.938 \pm 0.023$	Age/Gyr	13.626	$13.50 \pm 0.33$
$A_{217}^{\text{PS}}$	62.5	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.60	$1090.68 \pm 0.62$
$A_{143}^{\text{CIB}}$	3.05	$3.23 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	143.00	$142.1 \pm 2.9$
$A_{217}^{\text{CIB}}$	50.5	$49.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9905	$0.9906 \pm 0.0074$	$100\theta_*$	1.04105	$1.04093 \pm 0.00087$
$A_{143}^{\text{tSZ}}$	3.71	$2.41^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.004 \pm 0.013$	$z_{\text{drag}}$	1060.01	$1060.4 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.827^{+0.067}_{-0.075}$	$y_{148}^{\text{ACTe}}$	0.9867	$0.9868 \pm 0.0074$	$r_{\text{drag}}$	145.70	$144.7 \pm 3.0$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9610	$0.962 \pm 0.010$	$k_D$	0.14141	$0.1421 \pm 0.0022$
$\gamma^{\text{CIB}}$	0.638	$0.629 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9809	$0.980 \pm 0.020$	$100\theta_D$	0.16172	$0.16198 \pm 0.00074$
$c_{100}$	1.000585	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9832	$0.984 \pm 0.010$	$z_{\text{eq}}$	3370	$3348 \pm 74$
$c_{217}$	0.99740	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0167	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8190	$0.824 \pm 0.015$
$\xi^{\text{tSZ-CIB}}$	0.100	$< 0.461$	$\Omega_\Lambda$	0.6917	$0.697^{+0.022}_{-0.020}$	$r_{\text{drag}}/D_V(0.57)$	0.07177	$0.0721 \pm 0.0011$
$A^{\text{kSZ}}$	3.57	$5.70^{+2.8}_{-1.8}$	$\Omega_m$	0.3083	$0.303^{+0.020}_{-0.022}$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.39$ ; R-1 =0.00608

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.34 lowl: -7.20 CamSpec: 7807.92 highL: 693.16

#### 9.4 base\_nnu\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022351	$0.02238 \pm 0.00039$	$\beta_1^1$	0.43	$0.42 \pm 0.55$	$\sigma_8$	0.8339	$0.834 \pm 0.018$
$\Omega_c h^2$	0.12100	$0.1215 \pm 0.0046$	$A_{148}^{\text{PS, ACT}}$	10.39	$10.64^{+0.56}_{-0.63}$	$z_{\text{re}}$	11.42	$11.4 \pm 1.2$
$100\theta_{\text{MC}}$	1.04123	$1.04119 \pm 0.00071$	$A_{218}^{\text{PS, ACT}}$	76.01	$76.9 \pm 4.5$	$H_0$	69.27	$69.7^{+2.6}_{-3.0}$
$\tau$	0.0938	$0.094^{+0.013}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.47	$7.78^{+1.3}_{-1.7}$	$10^9 A_s$	2.221	$2.224^{+0.064}_{-0.079}$
$N_{\text{eff}}$	3.234	$3.28 \pm 0.33$	$A_{150}^{\text{PS, SPT}}$	9.89	$10.18 \pm 0.52$	$\Omega_m h^2$	0.14400	$0.1445 \pm 0.0048$
$n_s$	0.9693	$0.971 \pm 0.015$	$A_{220}^{\text{PS, SPT}}$	72.91	$74.5 \pm 4.5$	$\Omega_m h^3$	0.0998	$0.1008 \pm 0.0067$
$\ln(10^{10} A_s)$	3.1006	$3.101^{+0.030}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.833 \pm 0.088$	$Y_p$	0.25032	$0.2509 \pm 0.0044$
$A_{100}^{\text{PS}}$	209	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.546	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8412	$1.842^{+0.024}_{-0.022}$
$A_{143}^{\text{PS}}$	74.6	$75 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9081	$0.935 \pm 0.023$	Age/Gyr	13.602	$13.56 \pm 0.33$
$A_{217}^{\text{PS}}$	61.2	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.421	$0.44 \pm 0.19$	$z_*$	1090.32	$1090.36 \pm 0.57$
$A_{143}^{\text{CIB}}$	3.22	$3.23 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.84 \pm 0.20$	$r_*$	143.25	$142.9 \pm 2.9$
$A_{217}^{\text{CIB}}$	52.5	$49.5 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9908	$0.9915 \pm 0.0075$	$100\theta_*$	1.04123	$1.04116 \pm 0.00086$
$A_{143}^{\text{tSZ}}$	4.56	$2.40^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0023	$1.005 \pm 0.014$	$z_{\text{drag}}$	1060.20	$1060.3 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.825	$0.826^{+0.067}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9870	$0.9877 \pm 0.0074$	$r_{\text{drag}}$	145.91	$145.6 \pm 3.0$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9608	$0.963 \pm 0.011$	$k_D$	0.14129	$0.1415 \pm 0.0022$
$\gamma^{\text{CIB}}$	0.658	$0.635 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9824	$0.983 \pm 0.020$	$100\theta_D$	0.16162	$0.16173 \pm 0.00073$
$c_{100}$	1.000602	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9839	$0.987 \pm 0.010$	$z_{\text{eq}}$	3341	$3332 \pm 65$
$c_{217}$	0.99731	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0160	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8247	$0.827 \pm 0.013$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.441$	$\Omega_\Lambda$	0.6999	$0.702 \pm 0.018$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.0724 \pm 0.0010$
$A^{\text{kSZ}}$	1.33	$5.02^{+2.7}_{-1.9}$	$\Omega_m$	0.3001	$0.298 \pm 0.018$			

Best-fit  $\chi_{\text{eff}}^2 = 10517.02$ ; R-1 = 0.01538

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.33 lensing: 9.80 lowl: -7.72 CamSpec: 7808.44 highL: 692.07

## 9.5 base\_nnu\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022484	$0.02262 \pm 0.00030$	$\beta_1^1$	0.48	$0.50 \pm 0.55$	$\sigma_8$	0.8377	$0.851 \pm 0.018$
$\Omega_c h^2$	0.12371	$0.1258 \pm 0.0046$	$A_{148}^{\text{PS, ACT}}$	10.47	$10.47 \pm 0.59$	$z_{\text{re}}$	11.26	$12.1 \pm 1.2$
$100\theta_{\text{MC}}$	1.04099	$1.04084 \pm 0.00070$	$A_{218}^{\text{PS, ACT}}$	76.69	$76.6 \pm 4.4$	$H_0$	71.04	$72.1 \pm 1.9$
$\tau$	0.0912	$0.101^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.22	$7.48^{+1.3}_{-1.6}$	$10^9 A_s$	2.224	$2.278^{+0.063}_{-0.075}$
$N_{\text{eff}}$	3.466	$3.62 \pm 0.25$	$A_{150}^{\text{PS, SPT}}$	9.92	$9.93 \pm 0.52$	$\Omega_m h^2$	0.14684	$0.1491 \pm 0.0046$
$n_s$	0.9775	$0.983 \pm 0.010$	$A_{220}^{\text{PS, SPT}}$	73.77	$74.0 \pm 4.4$	$\Omega_m h^3$	0.1043	$0.1075 \pm 0.0052$
$\ln(10^{10} A_s)$	3.1017	$3.125^{+0.029}_{-0.032}$	$r_{95 \times 150}^{\text{PS}}$	0.814	$0.834^{+0.11}_{-0.090}$	$Y_P$	0.25337	$0.2553 \pm 0.0032$
$A_{100}^{\text{PS}}$	221	$226 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.589	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8527	$1.861 \pm 0.020$
$A_{143}^{\text{PS}}$	78.2	$78.4 \pm 8.6$	$r_{150 \times 220}^{\text{PS}}$	0.9222	$0.938 \pm 0.023$	Age/Gyr	13.379	$13.24 \pm 0.23$
$A_{217}^{\text{PS}}$	64.4	$64 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	$z_*$	1090.61	$1090.75 \pm 0.61$
$A_{143}^{\text{CIB}}$	3.11	$3.21 \pm 0.80$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.20$	$r_*$	141.38	$140.1 \pm 2.2$
$A_{217}^{\text{CIB}}$	49.8	$48.8^{+4.8}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9893	$0.9896 \pm 0.0073$	$100\theta_*$	1.04084	$1.04059 \pm 0.00080$
$A_{143}^{\text{tSZ}}$	3.34	$2.32^{+0.95}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0016	$1.003 \pm 0.013$	$z_{\text{drag}}$	1060.89	$1061.45 \pm 0.96$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.830^{+0.063}_{-0.073}$	$y_{148}^{\text{ACTe}}$	0.9854	$0.9856 \pm 0.0072$	$r_{\text{drag}}$	143.96	$142.7 \pm 2.3$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9602	$0.961 \pm 0.010$	$k_D$	0.14262	$0.1437 \pm 0.0018$
$\gamma^{\text{CIB}}$	0.625	$0.624 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9783	$0.978 \pm 0.020$	$100\theta_D$	0.16217	$0.16244 \pm 0.00061$
$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9814	$0.9826 \pm 0.0099$	$z_{\text{eq}}$	3307	$3294 \pm 55$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0160	$1.020 \pm 0.023$	$100\theta_{\text{eq}}$	0.8315	$0.834 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.178	$< 0.496$	$\Omega_\Lambda$	0.7090	$0.713^{+0.015}_{-0.014}$	$r_{\text{drag}}/D_V(0.57)$	0.07275	$0.07299 \pm 0.00087$
$A^{\text{kSZ}}$	4.42	$5.94^{+2.7}_{-1.7}$	$\Omega_m$	0.2910	$0.287^{+0.014}_{-0.015}$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.34$ ; R-1 = 0.01208

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.14 lowl: -8.60 CamSpec: 7808.99 highL: 694.25 Hubble - HST: 1.34

## 9.6 base\_nnu\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022385	$0.02256 \pm 0.00038$	$\beta_1^1$	0.48	$0.47 \pm 0.55$	$\sigma_8$	0.8352	$0.846 \pm 0.020$
$\Omega_c h^2$	0.1223	$0.1240 \pm 0.0049$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.49 \pm 0.59$	$z_{\text{re}}$	11.35	$12.0 \pm 1.2$
$100\theta_{\text{MC}}$	1.04102	$1.04101 \pm 0.00072$	$A_{218}^{\text{PS, ACT}}$	76.84	$76.7 \pm 4.5$	$H_0$	69.87	$71.5 \pm 2.7$
$\tau$	0.0925	$0.100^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.35	$7.52^{+1.3}_{-1.6}$	$10^9 A_s$	2.222	$2.265^{+0.071}_{-0.082}$
$N_{\text{eff}}$	3.327	$3.51 \pm 0.33$	$A_{150}^{\text{PS, SPT}}$	9.94	$9.97 \pm 0.52$	$\Omega_m h^2$	0.1453	$0.1472 \pm 0.0051$
$n_s$	0.9715	$0.980 \pm 0.014$	$A_{220}^{\text{PS, SPT}}$	73.87	$74.1 \pm 4.4$	$\Omega_m h^3$	0.1015	$0.1054^{+0.0065}_{-0.0073}$
$\ln(10^{10} A_s)$	3.1010	$3.120 \pm 0.033$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.833^{+0.11}_{-0.091}$	$Y_P$	0.25155	$0.2539 \pm 0.0043$
$A_{100}^{\text{PS}}$	216	$223 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.573	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8466	$1.853 \pm 0.022$
$A_{143}^{\text{PS}}$	76.0	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9206	$0.938 \pm 0.023$	Age/Gyr	13.517	$13.34 \pm 0.31$
$A_{217}^{\text{PS}}$	62.9	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.47	$1090.58 \pm 0.61$
$A_{143}^{\text{CIB}}$	3.05	$3.22 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	142.46	$141.1 \pm 2.8$
$A_{217}^{\text{CIB}}$	50.0	$49.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9903	$0.9902 \pm 0.0074$	$100\theta_*$	1.04097	$1.04083 \pm 0.00086$
$A_{143}^{\text{tSZ}}$	3.46	$2.36^{+0.98}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0026	$1.003 \pm 0.014$	$z_{\text{drag}}$	1060.43	$1061.1 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.828^{+0.066}_{-0.075}$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9863 \pm 0.0073$	$r_{\text{drag}}$	145.10	$143.7 \pm 2.9$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{217}^{\text{ACTe}}$	0.9612	$0.962 \pm 0.011$	$k_D$	0.14183	$0.1429 \pm 0.0022$
$\gamma^{\text{CIB}}$	0.631	$0.626 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9802	$0.980 \pm 0.020$	$100\theta_D$	0.16185	$0.16222 \pm 0.00073$
$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9831	$0.984 \pm 0.010$	$z_{\text{eq}}$	3331	$3298 \pm 66$
$c_{217}$	0.99742	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0172	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8266	$0.834 \pm 0.013$
$\xi^{\text{tSZ-CIB}}$	0.142	$< 0.481$	$\Omega_\Lambda$	0.7024	$0.712^{+0.019}_{-0.017}$	$r_{\text{drag}}/D_V(0.57)$	0.07236	$0.0729 \pm 0.0011$
$A^{\text{kSZ}}$	4.09	$5.83^{+2.8}_{-1.7}$	$\Omega_m$	0.2976	$0.288^{+0.017}_{-0.019}$			

Best-fit  $\chi_{\text{eff}}^2 = 10936.94$ ; R-1 = 0.01078

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.24 lowl: -7.98 CamSpec: 7808.70 highL: 693.44 SN - SNLS: 428.34

## 9.7 base\_nnu\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022167	$0.02240 \pm 0.00038$	$\beta_1^1$	0.55	$0.46 \pm 0.55$	$\sigma_8$	0.8363	$0.843 \pm 0.020$
$\Omega_c h^2$	0.12174	$0.1237 \pm 0.0049$	$A_{148}^{\text{PS, ACT}}$	10.17	$10.49 \pm 0.59$	$z_{\text{re}}$	11.43	$11.7 \pm 1.2$
$100\theta_{\text{MC}}$	1.04117	$1.04100 \pm 0.00072$	$A_{218}^{\text{PS, ACT}}$	75.55	$76.7 \pm 4.5$	$H_0$	68.15	$70.2^{+2.6}_{-2.9}$
$\tau$	0.0931	$0.096^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	6.94	$7.53^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.247^{+0.069}_{-0.080}$
$N_{\text{eff}}$	3.174	$3.40 \pm 0.33$	$A_{150}^{\text{PS, SPT}}$	9.66	$9.98 \pm 0.52$	$\Omega_m h^2$	0.1446	$0.1468 \pm 0.0051$
$n_s$	0.9638	$0.974 \pm 0.014$	$A_{220}^{\text{PS, SPT}}$	72.37	$74.1 \pm 4.4$	$\Omega_m h^3$	0.0985	$0.1032^{+0.0064}_{-0.0072}$
$\ln(10^{10} A_s)$	3.1002	$3.112 \pm 0.033$	$r_{95 \times 150}^{\text{PS}}$	0.821	$0.834^{+0.11}_{-0.091}$	$Y_P$	0.24946	$0.2525 \pm 0.0043$
$A_{100}^{\text{PS}}$	213	$221 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.578	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8431	$1.852 \pm 0.023$
$A_{143}^{\text{PS}}$	74.4	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9113	$0.938 \pm 0.023$	Age/Gyr	13.685	$13.46 \pm 0.32$
$A_{217}^{\text{PS}}$	62.5	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.446	$0.44 \pm 0.19$	$z_*$	1090.56	$1090.65 \pm 0.61$
$A_{143}^{\text{CIB}}$	3.49	$3.22 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.870	$0.85 \pm 0.20$	$r_*$	143.49	$141.8 \pm 2.8$
$A_{217}^{\text{CIB}}$	52.8	$49.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9905	$0.9904 \pm 0.0074$	$100\theta_*$	1.04123	$1.04090 \pm 0.00086$
$A_{143}^{\text{tSZ}}$	5.21	$2.39^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0006	$1.003 \pm 0.014$	$z_{\text{drag}}$	1059.78	$1060.6 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.827	$0.827^{+0.066}_{-0.075}$	$y_{148}^{\text{ACTe}}$	0.9869	$0.9866 \pm 0.0074$	$r_{\text{drag}}$	146.21	$144.4 \pm 2.9$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9589	$0.962 \pm 0.010$	$k_D$	0.14105	$0.1424 \pm 0.0022$
$\gamma^{\text{CIB}}$	0.659	$0.628 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9843	$0.980 \pm 0.020$	$100\theta_D$	0.16162	$0.16205 \pm 0.00073$
$c_{100}$	1.000584	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9832	$0.984 \pm 0.010$	$z_{\text{eq}}$	3381	$3333 \pm 69$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0153	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8169	$0.826 \pm 0.014$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.470$	$\Omega_\Lambda$	0.6888	$0.702^{+0.020}_{-0.018}$	$r_{\text{drag}}/D_V(0.57)$	0.07162	$0.0724 \pm 0.0011$
$A^{\text{kSZ}}$	1.07	$5.75^{+2.8}_{-1.8}$	$\Omega_m$	0.3112	$0.298 \pm 0.019$			

Best-fit  $\chi^2_{\text{eff}} = 10639.47$ ; R-1 =0.00705

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.43 lowl: -6.88 CamSpec: 7807.29 highL: 693.97 SN - Union2.1: 130.44



## 9.8 base\_nnu\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02207	$0.0237^{+0.0011}_{-0.00080}$	$r_{143 \times 217}^{\text{CIB}}$	0.736	$0.46 \pm 0.23$	$\Omega_m h^3$	0.0964	$0.127 \pm 0.016$
$\Omega_c h^2$	0.1205	$0.1309 \pm 0.0063$	$\gamma^{\text{CIB}}$	0.575	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.2480	$0.266^{+0.010}_{-0.0076}$
$100\theta_{\text{MC}}$	1.04122	$1.04073 \pm 0.00069$	$c_{100}$	1.000604	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8422	$1.874^{+0.023}_{-0.019}$
$\tau$	0.092	$0.217^{+0.083}_{-0.051}$	$c_{217}$	0.99649	$0.9965 \pm 0.0014$	Age/Gyr	13.79	$12.40^{+0.54}_{-0.80}$
$N_{\text{eff}}$	3.07	$4.53 \pm 0.71$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.48	$1090.61 \pm 0.68$
$n_s$	0.9634	$1.038^{+0.052}_{-0.028}$	$A^{\text{kSZ}}$	0.6	—	$r_*$	144.39	$134.4^{+4.2}_{-5.5}$
$\ln(10^{10} A_s)$	3.098	$3.36^{+0.17}_{-0.10}$	$\beta_1^1$	0.67	$0.59 \pm 0.57$	$100\theta_*$	1.04136	$1.03987^{+0.00088}_{-0.00099}$
$A_{100}^{\text{PS}}$	158	$179 \pm 60$	$\Omega_\Lambda$	0.6840	$0.764^{+0.048}_{-0.025}$	$z_{\text{drag}}$	1059.36	$1064.9^{+3.3}_{-2.4}$
$A_{143}^{\text{PS}}$	68.1	$58 \pm 10$	$\Omega_m$	0.3160	$0.236^{+0.025}_{-0.048}$	$r_{\text{drag}}$	147.2	$136.6^{+4.4}_{-5.9}$
$A_{217}^{\text{PS}}$	117.7	$107^{+20}_{-20}$	$\sigma_8$	0.835	$0.969^{+0.084}_{-0.062}$	$k_D$	0.14036	$0.1484^{+0.0045}_{-0.0038}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.4$	$z_{\text{re}}$	11.34	$20^{+5}_{-3}$	$100\theta_D$	0.16142	$0.1639^{+0.0014}_{-0.0012}$
$A_{217}^{\text{CIB}}$	26.9	$30^{+6}_{-10}$	$H_0$	67.3	$81.8^{+8.7}_{-7.3}$	$z_{\text{eq}}$	3396	$3090^{+120}_{-190}$
$A_{143}^{\text{tSZ}}$	5.67	—	$10^9 A_s$	2.215	$2.92^{+0.46}_{-0.34}$	$100\theta_{\text{eq}}$	0.8139	$0.881^{+0.042}_{-0.033}$
$r_{143 \times 217}^{\text{PS}}$	0.884	$> 0.851$	$\Omega_m h^2$	0.1432	$0.1553 \pm 0.0068$	$r_{\text{drag}}/D_V(0.57)$	0.07138	$0.0768^{+0.0034}_{-0.0028}$

Best-fit  $\chi^2_{\text{eff}} = 7791.30$ ; R-1 = 0.00644

$\chi^2_{\text{eff}}$ : CMB - lowl: -6.98 CamSpec: 7797.89

## 9.9 base\_nnu\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02223	$0.02295^{+0.00063}_{-0.00088}$	$r_{143 \times 217}^{\text{CIB}}$	0.626	$0.49^{+0.27}_{-0.21}$	$\Omega_m h^3$	0.0964	$0.1105^{+0.0092}_{-0.014}$
$\Omega_c h^2$	0.1186	$0.1237 \pm 0.0054$	$\gamma^{\text{CIB}}$	0.556	$0.53 \pm 0.13$	$Y_P$	0.2480	$0.2569^{+0.0063}_{-0.0082}$
$100\theta_{\text{MC}}$	1.04146	$1.04110 \pm 0.00072$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8347	$1.851^{+0.026}_{-0.021}$
$\tau$	0.094	$0.139^{+0.046}_{-0.060}$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	Age/Gyr	13.77	$13.09^{+0.64}_{-0.49}$
$N_{\text{eff}}$	3.07	$3.76^{+0.46}_{-0.67}$	$\xi^{\text{tSZ-CIB}}$	0.453	$< 0.620$	$z_*$	1090.10	$1090.29 \pm 0.68$
$n_s$	0.9678	$0.9998^{+0.024}_{-0.037}$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.78	$139.9^{+4.4}_{-3.9}$
$\ln(10^{10} A_s)$	3.097	$3.196^{+0.094}_{-0.12}$	$\beta_1^1$	0.63	$0.50 \pm 0.57$	$100\theta_*$	1.04159	$1.04074 \pm 0.00092$
$A_{100}^{\text{PS}}$	168	$177 \pm 60$	$\Omega_\Lambda$	0.6951	$0.733 \pm 0.035$	$z_{\text{drag}}$	1059.59	$1062.1^{+2.0}_{-2.6}$
$A_{143}^{\text{PS}}$	67.5	$54 \pm 10$	$\Omega_m$	0.3049	$0.267 \pm 0.035$	$r_{\text{drag}}$	147.50	$142.3^{+4.7}_{-4.1}$
$A_{217}^{\text{PS}}$	118.7	$103^{+20}_{-20}$	$\sigma_8$	0.8298	$0.876^{+0.038}_{-0.057}$	$k_D$	0.14015	$0.1439^{+0.0030}_{-0.0036}$
$A_{143}^{\text{CIB}}$	0.0	$< 12.2$	$z_{\text{re}}$	11.39	$14.7 \pm 3.9$	$100\theta_D$	0.16127	$0.16256^{+0.00093}_{-0.0012}$
$A_{217}^{\text{CIB}}$	25.0	$31^{+6}_{-10}$	$H_0$	68.1	$74.9^{+4.4}_{-7.1}$	$z_{\text{eq}}$	3357	$3208^{+160}_{-120}$
$A_{143}^{\text{tSZ}}$	4.39	—	$10^9 A_s$	2.214	$2.46^{+0.20}_{-0.32}$	$100\theta_{\text{eq}}$	0.8215	$0.854^{+0.025}_{-0.036}$
$r_{143 \times 217}^{\text{PS}}$	0.933	$> 0.843$	$\Omega_m h^2$	0.1415	$0.1473 \pm 0.0058$	$r_{\text{drag}}/D_V(0.57)$	0.07200	$0.0745^{+0.0019}_{-0.0029}$

Best-fit  $\chi^2_{\text{eff}} = 7801.62$ ; R-1 = 0.04066

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.90 lowl: -7.69 CamSpec: 7798.90

## 9.10 base\_nnu\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022188	$0.02237 \pm 0.00034$	$r_{143 \times 217}^{\text{CIB}}$	0.373	$0.46 \pm 0.23$	$\Omega_m h^3$	0.0966	$0.1041^{+0.0061}_{-0.0068}$
$\Omega_c h^2$	0.1192	$0.1249 \pm 0.0052$	$\gamma^{\text{CIB}}$	0.551	$0.54^{+0.13}_{-0.12}$	$Y_P$	0.24818	$0.2531 \pm 0.0040$
$100\theta_{\text{MC}}$	1.04142	$1.04082 \pm 0.00072$	$c_{100}$	1.000589	$1.00057 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8367	$1.857 \pm 0.024$
$\tau$	0.0938	$0.115^{+0.039}_{-0.035}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	13.765	$13.42 \pm 0.28$
$N_{\text{eff}}$	3.077	$3.46 \pm 0.31$	$\xi^{\text{tSZ-CIB}}$	0.35	—	$z_*$	1090.21	$1090.85 \pm 0.64$
$n_s$	0.9671	$0.978 \pm 0.012$	$A^{\text{kSZ}}$	1.04	—	$r_*$	144.62	$141.3 \pm 2.8$
$\ln(10^{10} A_s)$	3.098	$3.151 \pm 0.075$	$\beta_1^1$	0.67	$0.60 \pm 0.57$	$100\theta_*$	1.04154	$1.04069 \pm 0.00087$
$A_{100}^{\text{PS}}$	157	$178 \pm 60$	$\Omega_\Lambda$	0.6931	$0.701 \pm 0.012$	$z_{\text{drag}}$	1059.55	$1060.7 \pm 1.2$
$A_{143}^{\text{PS}}$	65.7	$56 \pm 10$	$\Omega_m$	0.3069	$0.299 \pm 0.012$	$r_{\text{drag}}$	147.35	$143.9 \pm 2.9$
$A_{217}^{\text{PS}}$	121.7	$107^{+20}_{-10}$	$\sigma_8$	0.8309	$0.864 \pm 0.037$	$k_D$	0.14023	$0.1427 \pm 0.0022$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.41	$13.1^{+3.4}_{-2.5}$	$100\theta_D$	0.16134	$0.16224 \pm 0.00072$
$A_{217}^{\text{CIB}}$	24.2	$30^{+6}_{-10}$	$H_0$	68.02	$70.4 \pm 2.0$	$z_{\text{eq}}$	3364.0	$3334 \pm 45$
$A^{\text{tSZ}}_{143}$	5.48	—	$10^9 A_s$	2.216	$2.34 \pm 0.18$	$100\theta_{\text{eq}}$	0.8201	$0.8260 \pm 0.0088$
$r_{143 \times 217}^{\text{PS}}$	0.931	$> 0.853$	$\Omega_m h^2$	0.1420	$0.1479 \pm 0.0054$	$r_{\text{drag}}/D_V(0.57)$	0.07189	$0.07229 \pm 0.00069$

Best-fit  $\chi^2_{\text{eff}} = 7792.81$ ; R-1 = 0.04860

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.98 6DF: 0.03 DR9: 0.36 CMB - lowl: -7.60 CamSpec: 7798.48

### 9.11 base\_nnu\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022518	$0.02290 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.667	$0.45 \pm 0.23$	$\Omega_m h^3$	0.1113	$0.1119 \pm 0.0057$
$\Omega_c h^2$	0.12959	$0.1268 \pm 0.0049$	$\gamma^{\text{CIB}}$	0.512	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.25781	$0.2580 \pm 0.0034$
$100\theta_{\text{MC}}$	1.04042	$1.04080 \pm 0.00072$	$c_{100}$	1.000583	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8740	$1.865 \pm 0.021$
$\tau$	0.0821	$0.157^{+0.042}_{-0.035}$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.083	$13.02 \pm 0.24$
$N_{\text{eff}}$	3.824	$3.83 \pm 0.28$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.40	$1090.69 \pm 0.69$
$n_s$	0.9835	$1.000 \pm 0.013$	$A^{\text{kSZ}}$	10.0	—	$r_*$	138.34	$138.7 \pm 2.3$
$\ln(10^{10} A_s)$	3.095	$3.241^{+0.083}_{-0.069}$	$\beta_1^1$	0.60	$0.60 \pm 0.57$	$100\theta_*$	1.04004	$1.04039 \pm 0.00081$
$A_{100}^{\text{PS}}$	163	$178 \pm 60$	$\Omega_\Lambda$	0.7124	$0.728^{+0.017}_{-0.016}$	$z_{\text{drag}}$	1061.65	$1062.3 \pm 1.1$
$A_{143}^{\text{PS}}$	25	$56 \pm 10$	$\Omega_m$	0.2876	$0.272^{+0.016}_{-0.017}$	$r_{\text{drag}}$	140.88	$141.2 \pm 2.4$
$A_{217}^{\text{PS}}$	88.6	$107^{+20}_{-20}$	$\sigma_8$	0.8450	$0.904 \pm 0.035$	$k_D$	0.14477	$0.1448 \pm 0.0019$
$A_{143}^{\text{CIB}}$	14.1	$< 11.3$	$z_{\text{re}}$	10.62	$16.3^{+3.2}_{-2.2}$	$100\theta_D$	0.16315	$0.16279 \pm 0.00067$
$A_{217}^{\text{CIB}}$	37.4	$30^{+6}_{-10}$	$H_0$	72.88	$74.4 \pm 2.3$	$z_{\text{eq}}$	3291	$3237 \pm 64$
$A^{\text{tSZ}}_{143}$	10.0	—	$10^9 A_s$	2.208	$2.56 \pm 0.19$	$100\theta_{\text{eq}}$	0.8344	$0.847 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.882	$> 0.849$	$\Omega_m h^2$	0.15275	$0.1503 \pm 0.0049$	$r_{\text{drag}}/D_V(0.57)$	0.07290	$0.0739 \pm 0.0011$

Best-fit  $\chi^2_{\text{eff}} = 7792.15$ ; R-1 = 0.01315

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.05 CamSpec: 7800.16 Hubble - HST: 0.15

## 9.12 base\_nnu\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02254	$0.02389 \pm 0.00069$	$r_{143 \times 217}^{\text{CIB}}$	0.628	$0.46 \pm 0.23$	$\Omega_m h^3$	0.1095	$0.130 \pm 0.013$
$\Omega_c h^2$	0.1274	$0.1315 \pm 0.0061$	$\gamma^{\text{CIB}}$	0.511	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.2567	$0.2676^{+0.0078}_{-0.0068}$
$100\theta_{\text{MC}}$	1.04066	$1.04073 \pm 0.00069$	$c_{100}$	1.000588	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8661	$1.875 \pm 0.020$
$\tau$	0.086	$0.229^{+0.062}_{-0.045}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	13.15	$12.29^{+0.48}_{-0.59}$
$N_{\text{eff}}$	3.73	$4.65 \pm 0.60$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.10	$1090.58 \pm 0.67$
$n_s$	0.9838	$1.044^{+0.034}_{-0.030}$	$A^{\text{kSZ}}$	10.0	—	$r_*$	139.24	$133.7^{+3.8}_{-4.4}$
$\ln(10^{10} A_s)$	3.099	$3.39^{+0.13}_{-0.090}$	$\beta_1^1$	0.63	$0.59 \pm 0.57$	$100\theta_*$	1.04033	$1.03979 \pm 0.00088$
$A_{100}^{\text{PS}}$	149	$179 \pm 60$	$\Omega_\Lambda$	0.7150	$0.771^{+0.034}_{-0.022}$	$z_{\text{drag}}$	1061.46	$1065.4^{+2.5}_{-2.1}$
$A_{143}^{\text{PS}}$	29.6	$58 \pm 10$	$\Omega_m$	0.2850	$0.229^{+0.022}_{-0.034}$	$r_{\text{drag}}$	141.78	$135.8^{+3.9}_{-4.7}$
$A_{217}^{\text{PS}}$	93.7	$107^{+20}_{-20}$	$\sigma_8$	0.843	$0.980^{+0.064}_{-0.056}$	$k_D$	0.14411	$0.1490 \pm 0.0034$
$A_{143}^{\text{CIB}}$	10.5	$< 11.4$	$z_{\text{re}}$	10.92	$21^{+4}_{-2}$	$100\theta_D$	0.16288	$0.1641 \pm 0.0011$
$A_{217}^{\text{CIB}}$	34.1	$30^{+6}_{-10}$	$H_0$	72.7	$83.0 \pm 5.8$	$z_{\text{eq}}$	3282	$3062^{+110}_{-140}$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.217	$2.98^{+0.35}_{-0.31}$	$100\theta_{\text{eq}}$	0.8363	$0.887 \pm 0.027$
$r_{143 \times 217}^{\text{PS}}$	0.881	$> 0.851$	$\Omega_m h^2$	0.1506	$0.1560 \pm 0.0065$	$r_{\text{drag}}/D_V(0.57)$	0.07308	$0.0773 \pm 0.0022$

Best-fit  $\chi^2_{\text{eff}} = 8219.16$ ; R-1 = 0.00627

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.04 CamSpec: 7799.89 SN - SNLS: 427.42

### 9.13 base\_nnu\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02236	$0.02340^{+0.00071}_{-0.00083}$	$r_{143 \times 217}^{\text{CIB}}$	0.567	$0.46 \pm 0.23$	$\Omega_m h^3$	0.1053	$0.121^{+0.012}_{-0.016}$
$\Omega_c h^2$	0.1257	$0.1296 \pm 0.0061$	$\gamma^{\text{CIB}}$	0.521	$0.54^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.2541	$0.2630 \pm 0.0073$
$100\theta_{\text{MC}}$	1.04075	$1.04073 \pm 0.00071$	$c_{100}$	1.000587	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8606	$1.872^{+0.024}_{-0.021}$
$\tau$	0.085	$0.193^{+0.064}_{-0.057}$	$c_{217}$	0.99640	$0.9965 \pm 0.0014$	Age/Gyr	13.35	$12.64 \pm 0.55$
$N_{\text{eff}}$	3.53	$4.26^{+0.57}_{-0.72}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.99	$1090.68 \pm 0.68$
$n_s$	0.9765	$1.023^{+0.030}_{-0.036}$	$A^{\text{kSZ}}$	6.98	—	$r_*$	140.70	$136.0 \pm 4.2$
$\ln(10^{10} A_s)$	3.094	$3.32^{+0.13}_{-0.12}$	$\beta_1^1$	0.64	$0.60 \pm 0.57$	$100\theta_*$	1.04057	$1.04004 \pm 0.00092$
$A_{100}^{\text{PS}}$	150	$179 \pm 60$	$\Omega_\Lambda$	0.7034	$0.749 \pm 0.031$	$z_{\text{drag}}$	1060.77	$1063.9 \pm 2.3$
$A_{143}^{\text{PS}}$	37.0	$57 \pm 10$	$\Omega_m$	0.2966	$0.251 \pm 0.031$	$r_{\text{drag}}$	143.32	$138.3 \pm 4.4$
$A_{217}^{\text{PS}}$	101.0	$107^{+20}_{-20}$	$\sigma_8$	0.840	$0.944 \pm 0.062$	$k_{\text{D}}$	0.14301	$0.1470 \pm 0.0035$
$A_{143}^{\text{CIB}}$	8.93	$< 11.4$	$z_{\text{re}}$	10.84	$18.7^{+4.6}_{-3.3}$	$100\theta_{\text{D}}$	0.16246	$0.1635^{+0.0011}_{-0.0012}$
$A_{217}^{\text{CIB}}$	32.2	$30^{+6}_{-10}$	$H_0$	70.8	$78.8^{+5.4}_{-7.1}$	$z_{\text{eq}}$	3325	$3150 \pm 130$
$A_{143}^{\text{tSZ}}$	9.21	—	$10^9 A_s$	2.207	$2.77 \pm 0.33$	$100\theta_{\text{eq}}$	0.8277	$0.866^{+0.026}_{-0.033}$
$r_{143 \times 217}^{\text{PS}}$	0.885	$> 0.850$	$\Omega_m h^2$	0.1487	$0.1536 \pm 0.0065$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07241	$0.0756^{+0.0021}_{-0.0028}$

Best-fit  $\chi_{\text{eff}}^2 = 7921.24$ ; R-1 = 0.00665

$\chi_{\text{eff}}^2$ : CMB - lowl: -8.61 CamSpec: 7798.96 SN - Union2.1: 130.09

## 9.14 base\_nnu\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022630	$0.02267 \pm 0.00049$	$\sigma_8$	0.815	$0.867^{+0.084}_{-0.10}$	$r_*$	145.3	$135 \pm 20$
$\Omega_c h^2$	0.1149	$0.141^{+0.024}_{-0.048}$	$z_{\text{re}}$	10.84	$11.4^{+1.5}_{-1.8}$	$100\theta_*$	1.0404	$1.0364^{+0.0055}_{-0.0084}$
$100\theta_{\text{MC}}$	1.0403	$1.0371^{+0.0043}_{-0.0070}$	$H_0$	69.7	$75.6^{+7.5}_{-10}$	$z_{\text{drag}}$	1060.28	$1063.1^{+3.4}_{-5.1}$
$\tau$	0.0901	$0.089 \pm 0.014$	$10^9 A_s$	2.220	$2.30 \pm 0.16$	$r_{\text{drag}}$	147.9	$138 \pm 20$
$N_{\text{eff}}$	3.09	$4.58^{+1.5}_{-2.7}$	$\Omega_m h^2$	0.1381	$0.164^{+0.024}_{-0.048}$	$k_D$	0.1399	$0.148^{+0.010}_{-0.015}$
$n_s$	0.9751	$0.990 \pm 0.028$	$\Omega_m h^3$	0.0963	$0.127^{+0.024}_{-0.055}$	$100\theta_D$	0.1608	$0.1642^{+0.0041}_{-0.0063}$
$\ln(10^{10} A_s)$	3.100	$3.133^{+0.079}_{-0.068}$	$Y_P$	0.2485	$0.264^{+0.023}_{-0.026}$	$z_{\text{eq}}$	3266	$3247 \pm 120$
$A_{\text{tSZ}}$	0.34	—	$10^9 A_s e^{-2\tau}$	1.853	$1.93 \pm 0.13$	$100\theta_{\text{eq}}$	0.8388	$0.842 \pm 0.022$
$\Omega_\Lambda$	0.7159	$0.715^{+0.029}_{-0.024}$	Age/Gyr	13.72	$12.8 \pm 1.4$	$r_{\text{drag}}/D_V(0.57)$	0.07311	$0.0729 \pm 0.0018$
$\Omega_m$	0.2841	$0.285^{+0.024}_{-0.029}$	$z_*$	1089.3	$1092.6^{+3.8}_{-6.1}$			

Best-fit  $\chi^2_{\text{eff}} = 7557.87$ ; R-1 = 0.02548

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.87

## 9.15 base\_nnu\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022546	$0.02250 \pm 0.00042$	$\sigma_8$	0.8226	$0.823^{+0.040}_{-0.046}$	$r_*$	144.6	$144.1 \pm 7.7$
$\Omega_c h^2$	0.1174	$0.119^{+0.012}_{-0.017}$	$z_{\text{re}}$	10.77	$10.7 \pm 1.2$	$100\theta_*$	1.03978	$1.0392^{+0.0040}_{-0.0045}$
$100\theta_{\text{MC}}$	1.03971	$1.0392^{+0.0035}_{-0.0041}$	$H_0$	68.82	$69.2^{+3.4}_{-4.1}$	$z_{\text{drag}}$	1060.28	$1060.4^{+1.8}_{-2.1}$
$\tau$	0.0882	$0.087 \pm 0.013$	$10^9 A_s$	2.223	$2.219 \pm 0.096$	$r_{\text{drag}}$	147.3	$146.8 \pm 7.9$
$N_{\text{eff}}$	3.11	$3.24^{+0.72}_{-0.98}$	$\Omega_m h^2$	0.1405	$0.142^{+0.012}_{-0.017}$	$k_D$	0.1405	$0.1409^{+0.0048}_{-0.0058}$
$n_s$	0.9705	$0.971 \pm 0.015$	$\Omega_m h^3$	0.0967	$0.099^{+0.012}_{-0.018}$	$100\theta_D$	0.16078	$0.1611^{+0.0021}_{-0.0026}$
$\ln(10^{10} A_s)$	3.1014	$3.099 \pm 0.043$	$Y_P$	0.2488	$0.250 \pm 0.011$	$z_{\text{eq}}$	3313	$3307^{+67}_{-75}$
$A_{\text{tSZ}}$	1.15	—	$10^9 A_s e^{-2\tau}$	1.863	$1.865 \pm 0.064$	$100\theta_{\text{eq}}$	0.8291	$0.830 \pm 0.011$
$\Omega_\Lambda$	0.7033	$0.703 \pm 0.012$	Age/Gyr	13.73	$13.69 \pm 0.69$	$r_{\text{drag}}/D_V(0.57)$	0.07230	$0.07228 \pm 0.00073$
$\Omega_m$	0.2967	$0.297 \pm 0.012$	$z_*$	1089.63	$1090.0^{+1.9}_{-2.4}$			

Best-fit  $\chi^2_{\text{eff}} = 7559.62$ ; R-1 = 0.02217

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.12 DR7: 0.31 DR9: 0.91 CMB - WMAP: 7558.28



## 9.16 base\_nnu\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022876	$0.02265 \pm 0.00047$	$\sigma_8$	0.8134	$0.850 \pm 0.046$	$r_*$	143.7	$137.6 \pm 6.6$
$\Omega_c h^2$	0.1160	$0.131^{+0.014}_{-0.018}$	$z_{\text{re}}$	10.90	$11.2 \pm 1.2$	$100\theta_*$	1.04012	$1.0367^{+0.0038}_{-0.0042}$
$100\theta_{\text{MC}}$	1.04022	$1.0372^{+0.0034}_{-0.0038}$	$H_0$	72.31	$73.8 \pm 2.3$	$z_{\text{drag}}$	1061.12	$1062.1 \pm 1.6$
$\tau$	0.0909	$0.089 \pm 0.014$	$10^9 A_s$	2.222	$2.279^{+0.087}_{-0.099}$	$r_{\text{drag}}$	146.2	$140.1 \pm 6.6$
$N_{\text{eff}}$	3.33	$4.03^{+0.68}_{-0.81}$	$\Omega_m h^2$	0.1395	$0.154^{+0.014}_{-0.018}$	$k_D$	0.1410	$0.1454 \pm 0.0049$
$n_s$	0.9833	$0.986 \pm 0.012$	$\Omega_m h^3$	0.1009	$0.114^{+0.012}_{-0.016}$	$100\theta_D$	0.16126	$0.1631^{+0.0019}_{-0.0022}$
$\ln(10^{10} A_s)$	3.1011	$3.126 \pm 0.040$	$Y_P$	0.2518	$0.2599 \pm 0.0086$	$z_{\text{eq}}$	3197	$3232 \pm 97$
$A_{\text{tSZ}}$	1.29	—	$10^9 A_s e^{-2\tau}$	1.853	$1.908 \pm 0.066$	$100\theta_{\text{eq}}$	0.8532	$0.844 \pm 0.020$
$\Omega_\Lambda$	0.7332	$0.717^{+0.027}_{-0.023}$	Age/Gyr	13.462	$13.01 \pm 0.49$	$r_{\text{drag}}/D_V(0.57)$	0.07423	$0.0731 \pm 0.0017$
$\Omega_m$	0.2668	$0.283^{+0.023}_{-0.027}$	$z_*$	1089.32	$1091.5^{+2.2}_{-2.6}$			

Best-fit  $\chi^2_{\text{eff}} = 7558.83$ ; R-1 = 0.01187

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.41 Hubble - HST: 0.42

### 9.17 base\_nnu\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022731	$0.02283 \pm 0.00048$	$\sigma_8$	0.810	$0.855^{+0.079}_{-0.094}$	$r_*$	145.4	$136 \pm 15$
$\Omega_c h^2$	0.1134	$0.136^{+0.022}_{-0.043}$	$z_{\text{re}}$	11.08	$11.5^{+1.5}_{-1.7}$	$100\theta_*$	1.0403	$1.0369^{+0.0054}_{-0.0078}$
$100\theta_{\text{MC}}$	1.0402	$1.0376^{+0.0042}_{-0.0066}$	$H_0$	70.8	$76.8^{+7.0}_{-10}$	$z_{\text{drag}}$	1060.43	$1063.1^{+3.2}_{-4.7}$
$\tau$	0.0936	$0.091 \pm 0.014$	$10^9 A_s$	2.224	$2.29 \pm 0.15$	$r_{\text{drag}}$	148.0	$139 \pm 15$
$N_{\text{eff}}$	3.13	$4.50^{+1.4}_{-2.5}$	$\Omega_m h^2$	0.1368	$0.160^{+0.022}_{-0.043}$	$k_D$	0.1397	$0.1471^{+0.0094}_{-0.014}$
$n_s$	0.9788	$0.995 \pm 0.026$	$\Omega_m h^3$	0.0969	$0.125^{+0.023}_{-0.050}$	$100\theta_D$	0.16082	$0.1640^{+0.0039}_{-0.0057}$
$\ln(10^{10} A_s)$	3.102	$3.129 \pm 0.067$	$Y_P$	0.2492	$0.263^{+0.021}_{-0.024}$	$z_{\text{eq}}$	3217	$3182 \pm 100$
$A_{\text{tSZ}}$	0.54	—	$10^9 A_s e^{-2\tau}$	1.844	$1.91 \pm 0.12$	$100\theta_{\text{eq}}$	0.8487	$0.855 \pm 0.020$
$\Omega_\Lambda$	0.7273	$0.732^{+0.023}_{-0.020}$	Age/Gyr	13.66	$12.8 \pm 1.3$	$r_{\text{drag}}/D_V(0.57)$	0.07385	$0.0740 \pm 0.0015$
$\Omega_m$	0.2727	$0.268^{+0.020}_{-0.023}$	$z_*$	1089.09	$1092.0^{+3.6}_{-5.4}$			

Best-fit  $\chi^2_{\text{eff}} = 7984.83$ ; R-1 = 0.01978

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.17 SN - SNLS: 426.66

## 9.18 base\_nnu\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022645	$0.02270 \pm 0.00048$	$\sigma_8$	0.814	$0.865^{+0.082}_{-0.10}$	$r_*$	145.3	$135 \pm 20$
$\Omega_c h^2$	0.1147	$0.140^{+0.024}_{-0.047}$	$z_{\text{re}}$	10.84	$11.4^{+1.5}_{-1.8}$	$100\theta_*$	1.0403	$1.0365^{+0.0054}_{-0.0082}$
$100\theta_{\text{MC}}$	1.0402	$1.0372^{+0.0042}_{-0.0069}$	$H_0$	69.9	$75.8^{+7.2}_{-10}$	$z_{\text{drag}}$	1060.31	$1063.1^{+3.3}_{-5.1}$
$\tau$	0.0901	$0.089 \pm 0.014$	$10^9 A_s$	2.220	$2.30 \pm 0.16$	$r_{\text{drag}}$	147.9	$138 \pm 20$
$N_{\text{eff}}$	3.10	$4.56^{+1.5}_{-2.6}$	$\Omega_m h^2$	0.1380	$0.163^{+0.024}_{-0.047}$	$k_D$	0.1399	$0.1478^{+0.0098}_{-0.015}$
$n_s$	0.9763	$0.991 \pm 0.027$	$\Omega_m h^3$	0.0964	$0.127^{+0.023}_{-0.054}$	$100\theta_D$	0.1608	$0.1642^{+0.0040}_{-0.0062}$
$\ln(10^{10} A_s)$	3.100	$3.133 \pm 0.070$	$Y_P$	0.2487	$0.264^{+0.022}_{-0.026}$	$z_{\text{eq}}$	3257	$3237 \pm 110$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.854	$1.92 \pm 0.12$	$100\theta_{\text{eq}}$	0.8405	$0.844 \pm 0.020$
$\Omega_\Lambda$	0.7177	$0.718 \pm 0.023$	Age/Gyr	13.71	$12.8 \pm 1.4$	$r_{\text{drag}}/D_V(0.57)$	0.07322	$0.0731 \pm 0.0016$
$\Omega_m$	0.2823	$0.282 \pm 0.023$	$z_*$	1089.27	$1092.5^{+3.7}_{-6.0}$			

Best-fit  $\chi^2_{\text{eff}} = 7687.72$ ; R-1 = 0.02501

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.82 SN - Union2.1: 129.90

### 9.19 base\_nnu\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022179	$0.02230 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.449	$0.47^{+0.26}_{-0.23}$	$\Omega_m h^3$	0.0966	$0.1029 \pm 0.0060$
$\Omega_c h^2$	0.1192	$0.1245 \pm 0.0051$	$\gamma^{\text{CIB}}$	0.561	$0.54 \pm 0.13$	$Y_P$	0.24820	$0.2523 \pm 0.0039$
$100\theta_{\text{MC}}$	1.04140	$1.04088 \pm 0.00075$	$c_{100}$	1.000586	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8365	$1.856 \pm 0.023$
$\tau$	0.0940	$0.093^{+0.012}_{-0.014}$	$c_{217}$	0.99647	$0.9965 \pm 0.0014$	Age/Gyr	13.764	$13.48 \pm 0.27$
$N_{\text{eff}}$	3.079	$3.40 \pm 0.30$	$\xi^{\text{tSZ-CIB}}$	0.18	—	$z_*$	1090.22	$1090.84 \pm 0.65$
$n_s$	0.9672	$0.973 \pm 0.010$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.61	$141.7 \pm 2.7$
$\ln(10^{10} A_s)$	3.0984	$3.108 \pm 0.030$	$\beta_1^1$	0.67	$0.61 \pm 0.57$	$100\theta_*$	1.04153	$1.04079 \pm 0.00089$
$A_{100}^{\text{PS}}$	157	$181 \pm 60$	$\Omega_\Lambda$	0.6932	$0.697^{+0.012}_{-0.011}$	$z_{\text{drag}}$	1059.55	$1060.4 \pm 1.1$
$A_{143}^{\text{PS}}$	66.2	$56 \pm 10$	$\Omega_m$	0.3068	$0.303 \pm 0.011$	$r_{\text{drag}}$	147.35	$144.4 \pm 2.8$
$A_{217}^{\text{PS}}$	119.5	$106^{+20}_{-20}$	$\sigma_8$	0.8310	$0.844 \pm 0.019$	$k_D$	0.14022	$0.1423 \pm 0.0021$
$A_{143}^{\text{CIB}}$	0.0	$< 11.8$	$z_{\text{re}}$	11.42	$11.5 \pm 1.1$	$100\theta_D$	0.16136	$0.16214 \pm 0.00074$
$A_{217}^{\text{CIB}}$	25.5	$31^{+7}_{-10}$	$H_0$	68.03	$69.8 \pm 1.9$	$z_{\text{eq}}$	3363.2	$3349 \pm 42$
$A_{143}^{\text{tSZ}}$	5.56	—	$10^9 A_s$	2.216	$2.239^{+0.062}_{-0.072}$	$100\theta_{\text{eq}}$	0.8202	$0.8231 \pm 0.0081$
$r_{143 \times 217}^{\text{PS}}$	0.910	$> 0.845$	$\Omega_m h^2$	0.1420	$0.1474 \pm 0.0052$	$r_{\text{drag}}/D_V(0.57)$	0.07189	$0.07207 \pm 0.00063$

Best-fit  $\chi^2_{\text{eff}} = 9807.20$ ; R-1 = 0.00576

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.36 DR7: 0.98 6DF: 0.03 CMB - lowLike: 2014.42 lowl: -7.60 CamSpec: 7798.53

## 9.20 base\_nnu\_planck\_lowl\_lowLike\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022262	$0.02228 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.537	$0.46^{+0.26}_{-0.23}$	$\Omega_m h^3$	0.0965	$0.1005 \pm 0.0057$
$\Omega_c h^2$	0.11838	$0.1219 \pm 0.0048$	$\gamma^{\text{CIB}}$	0.554	$0.53 \pm 0.12$	$Y_P$	0.24812	$0.2508 \pm 0.0038$
$100\theta_{\text{MC}}$	1.04145	$1.04110 \pm 0.00075$	$c_{100}$	1.000580	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8342	$1.845 \pm 0.023$
$\tau$	0.0942	$0.091^{+0.011}_{-0.013}$	$c_{217}$	0.99635	$0.9964 \pm 0.0014$	Age/Gyr	13.759	$13.58 \pm 0.27$
$N_{\text{eff}}$	3.070	$3.28 \pm 0.29$	$\xi^{\text{tSZ-CIB}}$	0.22	—	$z_*$	1090.04	$1090.53 \pm 0.62$
$n_s$	0.9690	$0.970 \pm 0.010$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.80	$143.0 \pm 2.7$
$\ln(10^{10} A_s)$	3.0977	$3.097 \pm 0.026$	$\beta_1^1$	0.67	$0.54 \pm 0.56$	$100\theta_*$	1.04158	$1.04109 \pm 0.00089$
$A_{100}^{\text{PS}}$	157	$177 \pm 60$	$\Omega_\Lambda$	0.6972	$0.699^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1059.67	$1060.1 \pm 1.0$
$A_{143}^{\text{PS}}$	65.8	$55 \pm 10$	$\Omega_m$	0.3028	$0.301 \pm 0.011$	$r_{\text{drag}}$	147.51	$145.6 \pm 2.8$
$A_{217}^{\text{PS}}$	120.1	$105^{+20}_{-20}$	$\sigma_8$	0.8291	$0.834 \pm 0.017$	$k_D$	0.14015	$0.1414 \pm 0.0020$
$A_{143}^{\text{CIB}}$	0.0	$< 11.7$	$z_{\text{re}}$	11.40	$11.2 \pm 1.0$	$100\theta_D$	0.16124	$0.16183 \pm 0.00073$
$A_{217}^{\text{CIB}}$	25.0	$30^{+7}_{-10}$	$H_0$	68.31	$69.4 \pm 1.9$	$z_{\text{eq}}$	3349.7	$3341 \pm 40$
$A_{143}^{\text{tSZ}}$	5.54	—	$10^9 A_s$	2.215	$2.213^{+0.055}_{-0.061}$	$100\theta_{\text{eq}}$	0.8229	$0.8245 \pm 0.0077$
$r_{143 \times 217}^{\text{PS}}$	0.913	$> 0.843$	$\Omega_m h^2$	0.14129	$0.1448 \pm 0.0049$	$r_{\text{drag}}/D_V(0.57)$	0.07211	$0.07219 \pm 0.00059$

Best-fit  $\chi^2_{\text{eff}} = 9817.05$ ; R-1 = 0.00771

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.63 DR7: 0.59 6DF: 0.05 CMB - lowLike: 2014.38 lensing: 9.73 lowl: -7.86 CamSpec: 7799.00

## 9.21 base\_nnu\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022250	$0.02229 \pm 0.00029$	$\beta_1^1$	0.44	$0.46 \pm 0.56$	$\sigma_8$	0.8351	$0.839 \pm 0.019$
$\Omega_c h^2$	0.12167	$0.1228^{+0.0045}_{-0.0051}$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.50 \pm 0.59$	$z_{\text{re}}$	11.40	$11.5 \pm 1.1$
$100\theta_{\text{MC}}$	1.04114	$1.04106 \pm 0.00071$	$A_{218}^{\text{PS, ACT}}$	76.00	$76.7 \pm 4.5$	$H_0$	68.80	$69.3 \pm 1.8$
$\tau$	0.0930	$0.094^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.33	$7.55^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.231^{+0.063}_{-0.072}$
$N_{\text{eff}}$	3.223	$3.30 \pm 0.27$	$A_{150}^{\text{PS, SPT}}$	9.74	$9.995 \pm 0.52$	$\Omega_m h^2$	0.14457	$0.1458 \pm 0.0048$
$n_s$	0.9667	$0.969 \pm 0.010$	$A_{220}^{\text{PS, SPT}}$	72.96	$74.1 \pm 4.5$	$\Omega_m h^3$	0.0995	$0.1011^{+0.0053}_{-0.0059}$
$\ln(10^{10} A_s)$	3.1001	$3.104 \pm 0.030$	$r_{95 \times 150}^{\text{PS}}$	0.791	$0.833 \pm 0.090$	$Y_{\text{P}}$	0.25014	$0.2511 \pm 0.0036$
$A_{100}^{\text{PS}}$	207	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.543	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8432	$1.847 \pm 0.022$
$A_{143}^{\text{PS}}$	74.4	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9123	$0.938 \pm 0.023$	Age/Gyr	13.628	$13.56 \pm 0.26$
$A_{217}^{\text{PS}}$	62.3	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.434	$0.44 \pm 0.19$	$z_*$	1090.49	$1090.62 \pm 0.59$
$A_{143}^{\text{CIB}}$	3.15	$3.23 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	143.21	$142.6 \pm 2.5$
$A_{217}^{\text{CIB}}$	51.8	$49.3 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9905	$0.9909 \pm 0.0074$	$100\theta_*$	1.04117	$1.04103 \pm 0.00084$
$A_{143}^{\text{tSZ}}$	4.38	$2.43^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0015	$1.004 \pm 0.013$	$z_{\text{drag}}$	1060.01	$1060.2 \pm 1.0$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.827^{+0.066}_{-0.075}$	$y_{148}^{\text{ACTe}}$	0.9867	$0.9871 \pm 0.0073$	$r_{\text{drag}}$	145.90	$145.3 \pm 2.6$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9601	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14126	$0.1417 \pm 0.0020$
$\gamma^{\text{CIB}}$	0.652	$0.632 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9819	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.16169	$0.16186 \pm 0.00066$
$c_{100}$	1.000585	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9829	$0.985 \pm 0.010$	$z_{\text{eq}}$	3359.4	$3354 \pm 42$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0162	$1.022^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8210	$0.8222 \pm 0.0080$
$\xi^{\text{tSZ-CIB}}$	0.016	$< 0.449$	$\Omega_{\Lambda}$	0.6946	$0.696 \pm 0.011$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07194	$0.07203 \pm 0.00062$
$A^{\text{kSZ}}$	2.32	$5.61^{+2.8}_{-1.8}$	$\Omega_{\text{m}}$	0.3054	$0.304 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.99$ ; R-1 =0.00671

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.88 DR9: 0.41 6DF: 0.12 CMB - lowLike: 2014.36 lowl: -7.35 CamSpec: 7807.88 highL: 693.55

## 9.22 base\_nnu\_planck\_lowl\_lowLike\_highL\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022329	$0.02226 \pm 0.00029$	$\beta_1^1$	0.47	$0.41 \pm 0.56$	$\sigma_8$	0.8335	$0.831 \pm 0.016$
$\Omega_c h^2$	0.12101	$0.1208 \pm 0.0044$	$A_{148}^{\text{PS, ACT}}$	10.39	$10.64 \pm 0.60$	$z_{\text{re}}$	11.36	$11.2 \pm 1.0$
$100\theta_{\text{MC}}$	1.04119	$1.04122 \pm 0.00070$	$A_{218}^{\text{PS, ACT}}$	76.06	$76.8 \pm 4.5$	$H_0$	69.07	$68.9 \pm 1.8$
$\tau$	0.0930	$0.092 \pm 0.012$	$A_{95}^{\text{PS, SPT}}$	7.44	$7.76^{+1.4}_{-1.6}$	$10^9 A_s$	2.218	$2.210^{+0.055}_{-0.063}$
$N_{\text{eff}}$	3.219	$3.20 \pm 0.26$	$A_{150}^{\text{PS, SPT}}$	9.89	$10.17 \pm 0.51$	$\Omega_m h^2$	0.14399	$0.1437 \pm 0.0045$
$n_s$	0.9684	$0.967 \pm 0.010$	$A_{220}^{\text{PS, SPT}}$	73.24	$74.5 \pm 4.5$	$\Omega_m h^3$	0.0995	$0.0991 \pm 0.0053$
$\ln(10^{10} A_s)$	3.0991	$3.095 \pm 0.026$	$r_{95 \times 150}^{\text{PS}}$	0.799	$0.835 \pm 0.088$	$Y_{\text{P}}$	0.25012	$0.2498 \pm 0.0036$
$A_{100}^{\text{PS}}$	210	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.547	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8413	$1.838 \pm 0.021$
$A_{143}^{\text{PS}}$	74.3	$76.0 \pm 8.4$	$r_{150 \times 220}^{\text{PS}}$	0.9080	$0.934 \pm 0.023$	Age/Gyr	13.620	$13.65 \pm 0.26$
$A_{217}^{\text{PS}}$	61.9	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.423	$0.43^{+0.19}_{-0.21}$	$z_*$	1090.33	$1090.38 \pm 0.56$
$A_{143}^{\text{CIB}}$	3.24	$3.25 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.838	$0.85 \pm 0.20$	$r_*$	143.34	$143.6 \pm 2.5$
$A_{217}^{\text{CIB}}$	52.3	$49.6^{+4.8}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9910	$0.9912 \pm 0.0076$	$100\theta_*$	1.04122	$1.04126 \pm 0.00083$
$A_{143}^{\text{tSZ}}$	4.66	$2.44^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0015	$1.005 \pm 0.013$	$z_{\text{drag}}$	1060.12	$1059.9 \pm 1.0$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.828^{+0.066}_{-0.075}$	$y_{148}^{\text{ACTe}}$	0.9870	$0.9875 \pm 0.0074$	$r_{\text{drag}}$	146.00	$146.3 \pm 2.6$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9601	$0.963 \pm 0.010$	$k_{\text{D}}$	0.14122	$0.1410 \pm 0.0019$
$\gamma^{\text{CIB}}$	0.657	$0.636 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9831	$0.983 \pm 0.020$	$100\theta_{\text{D}}$	0.16159	$0.16163 \pm 0.00065$
$c_{100}$	1.000594	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9841	$0.986 \pm 0.010$	$z_{\text{eq}}$	3347.3	$3348 \pm 40$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0165	$1.023^{+0.023}_{-0.025}$	$100\theta_{\text{eq}}$	0.8235	$0.8233 \pm 0.0077$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.431$	$\Omega_{\Lambda}$	0.6982	$0.697^{+0.012}_{-0.010}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07214	$0.07212 \pm 0.00059$
$A^{\text{kSZ}}$	1.21	$4.88^{+2.7}_{-2.0}$	$\Omega_{\text{m}}$	0.3018	$0.303 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 10518.42$ ; R-1 = 0.01767

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.55 DR9: 0.67 6DF: 0.17 CMB - lowLike: 2014.31 lensing: 9.85 lowl: -7.62 CamSpec: 7808.17 highL: 692.25

### 9.23 base\_nnu\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022385	$0.02247 \pm 0.00026$	$\beta_1^1$	0.48	$0.51 \pm 0.55$	$\sigma_8$	0.8370	$0.850 \pm 0.018$
$\Omega_c h^2$	0.12318	$0.1257 \pm 0.0044$	$A_{148}^{\text{PS, ACT}}$	10.22	$10.47 \pm 0.60$	$z_{\text{re}}$	11.24	$11.8 \pm 1.2$
$100\theta_{\text{MC}}$	1.04100	$1.04081 \pm 0.00068$	$A_{218}^{\text{PS, ACT}}$	75.98	$76.5 \pm 4.5$	$H_0$	70.06	$70.9 \pm 1.5$
$\tau$	0.0909	$0.097^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.27	$7.47^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.262^{+0.062}_{-0.072}$
$N_{\text{eff}}$	3.372	$3.52 \pm 0.24$	$A_{150}^{\text{PS, SPT}}$	9.68	$9.93 \pm 0.51$	$\Omega_m h^2$	0.14621	$0.1488 \pm 0.0045$
$n_s$	0.9733	$0.9772 \pm 0.0086$	$A_{220}^{\text{PS, SPT}}$	72.57	$74.0 \pm 4.4$	$\Omega_m h^3$	0.10244	$0.1055 \pm 0.0048$
$\ln(10^{10} A_s)$	3.0999	$3.118 \pm 0.029$	$r_{95 \times 150}^{\text{PS}}$	0.793	$0.836^{+0.11}_{-0.088}$	$Y_P$	0.25213	$0.2540 \pm 0.0030$
$A_{100}^{\text{PS}}$	211	$225 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.546	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8505	$1.861 \pm 0.020$
$A_{143}^{\text{PS}}$	76.5	$78.1 \pm 8.4$	$r_{150 \times 220}^{\text{PS}}$	0.9125	$0.938 \pm 0.023$	Age/Gyr	13.477	$13.35 \pm 0.21$
$A_{217}^{\text{PS}}$	64.2	$64 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.433	$0.44 \pm 0.19$	$z_*$	1090.60	$1090.84 \pm 0.57$
$A_{143}^{\text{CIB}}$	3.17	$3.22 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	142.02	$140.7 \pm 2.2$
$A_{217}^{\text{CIB}}$	51.6	$49.0^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9895	$0.9898 \pm 0.0074$	$100\theta_*$	1.04092	$1.04063 \pm 0.00078$
$A_{143}^{\text{tSZ}}$	4.44	$2.37^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0005	$1.002 \pm 0.013$	$z_{\text{drag}}$	1060.54	$1061.03 \pm 0.89$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.830^{+0.062}_{-0.073}$	$y_{148}^{\text{ACTe}}$	0.9856	$0.9859 \pm 0.0072$	$r_{\text{drag}}$	144.65	$143.3 \pm 2.2$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9589	$0.961 \pm 0.011$	$k_D$	0.14215	$0.1432 \pm 0.0017$
$\gamma^{\text{CIB}}$	0.648	$0.627 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9801	$0.979 \pm 0.020$	$100\theta_D$	0.16198	$0.16229 \pm 0.00060$
$c_{100}$	1.000583	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9810	$0.983 \pm 0.010$	$z_{\text{eq}}$	3332.4	$3329 \pm 38$
$c_{217}$	0.99729	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0128	$1.020^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8264	$0.8272 \pm 0.0073$
$\xi^{\text{tSZ-CIB}}$	0.014	$< 0.472$	$\Omega_\Lambda$	0.7021	$0.7036 \pm 0.0096$	$r_{\text{drag}}/D_V(0.57)$	0.07235	$0.07242 \pm 0.00057$
$A^{\text{kSZ}}$	2.28	$5.78^{+2.7}_{-1.8}$	$\Omega_m$	0.2979	$0.2964 \pm 0.0096$			

Best-fit  $\chi_{\text{eff}}^2 = 10512.92$ ; R-1 = 0.01333

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.98 DR7: 0.29 6DF: 0.40 CMB - lowLike: 2014.20 lowl: -8.22 CamSpec: 7808.10 highL: 694.59 Hubble - HST: 2.43



## 9.24 base\_nnu\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022300	$0.02262^{+0.00038}_{-0.00043}$	$r_{143 \times 217}^{\text{PS}}$	0.873	$> 0.838$	$\Omega_m h^3$	0.0991	$0.1088^{+0.0074}_{-0.0087}$
$\Omega_c h^2$	0.1204	$0.1263 \pm 0.0055$	$r_{143 \times 217}^{\text{CIB}}$	0.332	$0.50^{+0.26}_{-0.21}$	$Y_{\text{P}}$	0.24991	$0.2560 \pm 0.0048$
$100\theta_{\text{MC}}$	1.04131	$1.04079 \pm 0.00074$	$\gamma^{\text{CIB}}$	0.537	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8429	$1.865 \pm 0.024$
$\tau$	0.0934	$0.0999^{+0.014}_{-0.017}$	$c_{100}$	1.000598	$1.00059 \pm 0.00040$	Age/Gyr	13.632	$13.19 \pm 0.35$
$N_{\text{eff}}$	3.204	$3.68 \pm 0.38$	$c_{217}$	0.99644	$0.9966 \pm 0.0014$	$z_*$	1090.30	$1090.86 \pm 0.67$
$n_s$	0.9726	$0.987 \pm 0.015$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.606$	$r_*$	143.59	$139.8 \pm 3.1$
$\ln(10^{10} A_s)$	3.1007	$3.125^{+0.032}_{-0.038}$	$A^{\text{kSZ}}$	1.17	—	$100\theta_*$	1.04133	$1.04050 \pm 0.00090$
$\alpha_{\text{SNLS}}$	1.419	$1.43 \pm 0.11$	$\beta_1^1$	0.70	$0.64 \pm 0.57$	$z_{\text{drag}}$	1060.01	$1061.5 \pm 1.4$
$\beta_{\text{SNLS}}$	3.248	$3.25 \pm 0.11$	$\Omega_\Lambda$	0.7000	$0.716 \pm 0.019$	$r_{\text{drag}}$	146.27	$142.3 \pm 3.2$
$A_{100}^{\text{PS}}$	154	$188 \pm 60$	$\Omega_m$	0.3000	$0.284 \pm 0.019$	$k_{\text{D}}$	0.14098	$0.1439 \pm 0.0024$
$A_{143}^{\text{PS}}$	66.5	$57 \pm 10$	$\sigma_8$	0.8333	$0.852 \pm 0.022$	$100\theta_{\text{D}}$	0.16161	$0.16265 \pm 0.00085$
$A_{217}^{\text{PS}}$	121.5	$104^{+20}_{-20}$	$z_{\text{re}}$	11.38	$12.0 \pm 1.3$	$z_{\text{eq}}$	3339	$3280 \pm 71$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	69.13	$72.6^{+2.9}_{-3.3}$	$100\theta_{\text{eq}}$	0.8250	$0.837 \pm 0.014$
$A_{217}^{\text{CIB}}$	24.8	$32^{+7}_{-10}$	$10^9 A_s$	2.221	$2.278^{+0.071}_{-0.089}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07226	$0.0732^{+0.0011}_{-0.0012}$
$A_{143}^{\text{tSZ}}$	6.12	—	$\Omega_m h^2$	0.1433	$0.1495 \pm 0.0057$			

Best-fit  $\chi_{\text{eff}}^2 = 10228.95$ ; R-1 = 0.01078

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.31 lowl: -8.21 CamSpec: 7798.91 SN - SNLS: 423.27

## 9.25 base\_nnu\_planck\_lowl\_lowLike\_SNLS\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022371	$0.02262 \pm 0.00039$	$r_{143 \times 217}^{\text{PS}}$	0.906	$> 0.838$	$\Omega_m h^3$	0.0975	$0.1060^{+0.0069}_{-0.0085}$
$\Omega_c h^2$	0.1180	$0.1237 \pm 0.0052$	$r_{143 \times 217}^{\text{CIB}}$	0.698	$0.48^{+0.25}_{-0.22}$	$Y_P$	0.24878	$0.2543 \pm 0.0047$
$100\theta_{\text{MC}}$	1.04155	$1.04101 \pm 0.00073$	$\gamma^{\text{CIB}}$	0.542	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8328	$1.854 \pm 0.023$
$\tau$	0.0947	$0.099^{+0.014}_{-0.016}$	$c_{100}$	1.000601	$1.00060 \pm 0.00040$	Age/Gyr	13.697	$13.30 \pm 0.35$
$N_{\text{eff}}$	3.116	$3.54^{+0.35}_{-0.41}$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	$z_*$	1089.92	$1090.50 \pm 0.63$
$n_s$	0.9724	$0.984 \pm 0.015$	$\xi^{\text{tSZ-CIB}}$	0.12	—	$r_*$	144.58	$141.0 \pm 3.1$
$\ln(10^{10} A_s)$	3.0979	$3.118^{+0.030}_{-0.036}$	$A^{\text{kSZ}}$	1.26	—	$100\theta_*$	1.04163	$1.04080 \pm 0.00090$
$\alpha_{\text{SNLS}}$	1.420	$1.43 \pm 0.11$	$\beta_1^1$	0.66	$0.59 \pm 0.57$	$z_{\text{drag}}$	1059.93	$1061.2 \pm 1.4$
$\beta_{\text{SNLS}}$	3.247	$3.26 \pm 0.11$	$\Omega_\Lambda$	0.7046	$0.716 \pm 0.017$	$r_{\text{drag}}$	147.25	$143.6 \pm 3.2$
$A_{100}^{\text{PS}}$	144	$182 \pm 60$	$\Omega_m$	0.2954	$0.284 \pm 0.017$	$k_D$	0.14033	$0.1430 \pm 0.0024$
$A_{143}^{\text{PS}}$	61.1	$54 \pm 10$	$\sigma_8$	0.8272	$0.844^{+0.019}_{-0.021}$	$100\theta_D$	0.16129	$0.16225 \pm 0.00082$
$A_{217}^{\text{PS}}$	119.4	$103^{+20}_{-20}$	$z_{\text{re}}$	11.41	$11.9 \pm 1.2$	$z_{\text{eq}}$	3324	$3279 \pm 63$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	69.09	$72.0^{+2.6}_{-3.2}$	$100\theta_{\text{eq}}$	0.8282	$0.837^{+0.012}_{-0.014}$
$A_{217}^{\text{CIB}}$	24.4	$31^{+7}_{-10}$	$10^9 A_s$	2.215	$2.262^{+0.066}_{-0.084}$	$r_{\text{drag}}/D_V(0.57)$	0.07254	$0.07322^{+0.00095}_{-0.0011}$
$A_{143}^{\text{tSZ}}$	6.46	—	$\Omega_m h^2$	0.1410	$0.1470 \pm 0.0054$			

Best-fit  $\chi_{\text{eff}}^2 = 10238.70$ ; R-1 = 0.01174

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.31 lensing: 9.31 lowl: -8.25 CamSpec: 7799.80 SN - SNLS: 422.91

## 9.26 base\_nnu\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022270	$0.02236 \pm 0.00028$	$r_{143 \times 217}^{\text{PS}}$	0.953	$> 0.845$	$\Omega_m h^3$	0.0976	$0.1038 \pm 0.0059$
$\Omega_c h^2$	0.1194	$0.1244 \pm 0.0051$	$r_{143 \times 217}^{\text{CIB}}$	0.489	$0.47^{+0.26}_{-0.23}$	$Y_{\text{P}}$	0.24886	$0.2530 \pm 0.0038$
$100\theta_{\text{MC}}$	1.04142	$1.04088 \pm 0.00073$	$\gamma^{\text{CIB}}$	0.554	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8389	$1.857^{+0.025}_{-0.022}$
$\tau$	0.0943	$0.095^{+0.012}_{-0.015}$	$c_{100}$	1.000583	$1.00058 \pm 0.00040$	Age/Gyr	13.708	$13.43 \pm 0.27$
$N_{\text{eff}}$	3.125	$3.44 \pm 0.29$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	$z_*$	1090.18	$1090.80 \pm 0.65$
$n_s$	0.9702	$0.976 \pm 0.010$	$\xi^{\text{tSZ-CIB}}$	0.39	—	$r_*$	144.25	$141.5^{+2.6}_{-2.9}$
$\ln(10^{10} A_s)$	3.1003	$3.111^{+0.028}_{-0.033}$	$A^{\text{kSZ}}$	0.8	—	$100\theta_*$	1.04150	$1.04076 \pm 0.00087$
$\alpha_{\text{SNLS}}$	1.420	$1.43 \pm 0.11$	$\beta_1^1$	0.69	$0.62 \pm 0.57$	$z_{\text{drag}}$	1059.82	$1060.6 \pm 1.0$
$\beta_{\text{SNLS}}$	3.251	$3.25 \pm 0.11$	$\Omega_{\Lambda}$	0.6972	$0.702 \pm 0.011$	$r_{\text{drag}}$	146.95	$144.1^{+2.7}_{-3.0}$
$A_{100}^{\text{PS}}$	147	$182 \pm 60$	$\Omega_m$	0.3028	$0.298 \pm 0.011$	$k_{\text{D}}$	0.14053	$0.1425 \pm 0.0021$
$A_{143}^{\text{PS}}$	64.0	$57 \pm 10$	$\sigma_8$	0.8317	$0.845 \pm 0.020$	$100\theta_{\text{D}}$	0.16140	$0.16221 \pm 0.00073$
$A_{217}^{\text{PS}}$	122.9	$106^{+20}_{-20}$	$z_{\text{re}}$	11.43	$11.6^{+1.1}_{-1.2}$	$z_{\text{eq}}$	3350.3	$3331 \pm 41$
$A_{143}^{\text{CIB}}$	0.0	$< 11.9$	$H_0$	68.57	$70.4 \pm 1.8$	$100\theta_{\text{eq}}$	0.8229	$0.8266 \pm 0.0078$
$A_{217}^{\text{CIB}}$	23.9	$31^{+7}_{-9}$	$10^9 A_s$	2.220	$2.245^{+0.061}_{-0.076}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07211	$0.07235 \pm 0.00061$
$A_{143}^{\text{tSZ}}$	5.95	—	$\Omega_m h^2$	0.1423	$0.1475 \pm 0.0052$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.74$ ; R-1 = 0.01395

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.60 6DF: 0.08 DR9: 0.62 CMB - lowLike: 2014.38 lowl: -7.96 CamSpec: 7798.98 SN - SNLS: 423.50

## 9.27 base\_nnu\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022528	$0.02269 \pm 0.00030$	$r_{143 \times 217}^{\text{PS}}$	0.882	$> 0.838$	$\Omega_m h^3$	0.1072	$0.1103 \pm 0.0056$
$\Omega_c h^2$	0.12517	$0.1270 \pm 0.0048$	$r_{143 \times 217}^{\text{CIB}}$	0.597	$0.51^{+0.26}_{-0.20}$	$Y_{\text{P}}$	0.25530	$0.2570 \pm 0.0033$
$100\theta_{\text{MC}}$	1.04082	$1.04073 \pm 0.00071$	$\gamma^{\text{CIB}}$	0.511	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8580	$1.868 \pm 0.021$
$\tau$	0.0781	$0.101^{+0.014}_{-0.016}$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	Age/Gyr	13.241	$13.11 \pm 0.23$
$N_{\text{eff}}$	3.618	$3.76 \pm 0.27$	$c_{217}$	0.99639	$0.9966 \pm 0.0014$	$z_*$	1090.82	$1090.90 \pm 0.65$
$n_s$	0.9818	$0.990 \pm 0.010$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.605$	$r_*$	140.29	$139.2 \pm 2.3$
$\ln(10^{10} A_s)$	3.0783	$3.130 \pm 0.031$	$A^{\text{kSZ}}$	10.0	—	$100\theta_*$	1.04058	$1.04038 \pm 0.00082$
$\alpha_{\text{SNLS}}$	1.419	$1.43 \pm 0.11$	$\beta_1^1$	0.66	$0.64 \pm 0.57$	$z_{\text{drag}}$	1061.19	$1061.79 \pm 0.97$
$\beta_{\text{SNLS}}$	3.249	$3.26 \pm 0.11$	$\Omega_{\Lambda}$	0.7158	$0.720^{+0.014}_{-0.013}$	$r_{\text{drag}}$	142.85	$141.7 \pm 2.4$
$A_{100}^{\text{PS}}$	139	$189 \pm 60$	$\Omega_m$	0.2842	$0.280 \pm 0.013$	$k_{\text{D}}$	0.14332	$0.1443 \pm 0.0019$
$A_{143}^{\text{PS}}$	32.4	$58 \pm 10$	$\sigma_8$	0.8293	$0.855 \pm 0.019$	$100\theta_{\text{D}}$	0.16259	$0.16279 \pm 0.00067$
$A_{217}^{\text{PS}}$	96.9	$104^{+20}_{-20}$	$z_{\text{re}}$	10.12	$12.1 \pm 1.2$	$z_{\text{eq}}$	3278	$3266 \pm 52$
$A_{143}^{\text{CIB}}$	8.10	—	$H_0$	72.25	$73.3 \pm 1.9$	$100\theta_{\text{eq}}$	0.8371	$0.840 \pm 0.011$
$A_{217}^{\text{CIB}}$	31.9	$32^{+7}_{-10}$	$10^9 A_s$	2.172	$2.288^{+0.066}_{-0.078}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07315	$0.07340 \pm 0.00085$
$A_{143}^{\text{tSZ}}$	10.0	—	$\Omega_m h^2$	0.14834	$0.1504 \pm 0.0049$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.04$ ; R-1 = 0.01130

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.89 lowl: -9.09 CamSpec: 7800.81 Hubble - HST: 0.43 SN - SNLS: 422.10

## 9.28 base\_nnu\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022177	$0.02246 \pm 0.00039$	$r_{143 \times 217}^{\text{CIB}}$	0.580	$0.49^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.0974	$0.1063^{+0.0076}_{-0.0085}$
$\Omega_c h^2$	0.1203	$0.1258 \pm 0.0055$	$\gamma^{\text{CIB}}$	0.548	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.24869	$0.2544 \pm 0.0049$
$100\theta_{\text{MC}}$	1.04131	$1.04082 \pm 0.00074$	$c_{100}$	1.000574	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8424	$1.862 \pm 0.025$
$\tau$	0.0916	$0.097^{+0.014}_{-0.017}$	$c_{217}$	0.99643	$0.9965 \pm 0.0014$	Age/Gyr	13.734	$13.32 \pm 0.36$
$N_{\text{eff}}$	3.116	$3.56 \pm 0.38$	$\xi^{\text{tSZ-CIB}}$	0.212	$< 0.614$	$z_*$	1090.37	$1090.91 \pm 0.68$
$n_s$	0.9670	$0.980 \pm 0.016$	$A^{\text{kSZ}}$	1.11	—	$r_*$	144.13	$140.6 \pm 3.2$
$\ln(10^{10} A_s)$	3.0968	$3.118^{+0.033}_{-0.036}$	$\beta_1^1$	0.71	$0.62 \pm 0.57$	$100\theta_*$	1.04141	$1.04062 \pm 0.00091$
$A_{100}^{\text{PS}}$	152	$186 \pm 60$	$\Omega_\Lambda$	0.6906	$0.706^{+0.021}_{-0.019}$	$z_{\text{drag}}$	1059.63	$1061.0 \pm 1.4$
$A_{143}^{\text{PS}}$	65.3	$57 \pm 10$	$\Omega_m$	0.3094	$0.294^{+0.019}_{-0.021}$	$r_{\text{drag}}$	146.86	$143.1 \pm 3.3$
$A_{217}^{\text{PS}}$	122.0	$105^{+20}_{-20}$	$\sigma_8$	0.8330	$0.850 \pm 0.021$	$k_D$	0.14059	$0.1432 \pm 0.0025$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.26	$11.8 \pm 1.3$	$100\theta_D$	0.16145	$0.16245 \pm 0.00086$
$A_{217}^{\text{CIB}}$	24.4	$32^{+7}_{-10}$	$H_0$	68.02	$71.3 \pm 3.0$	$z_{\text{eq}}$	3374	$3316 \pm 72$
$A^{\text{tSZ}}_{143}$	5.84	—	$10^9 A_s$	2.213	$2.261^{+0.071}_{-0.084}$	$100\theta_{\text{eq}}$	0.8182	$0.830 \pm 0.014$
$r_{143 \times 217}^{\text{PS}}$	0.913	$> 0.840$	$\Omega_m h^2$	0.1432	$0.1489 \pm 0.0057$	$r_{\text{drag}}/D_V(0.57)$	0.07174	$0.0726 \pm 0.0011$

Best-fit  $\chi^2_{\text{eff}} = 9935.94$ ; R-1 = 0.00985

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.32 lowl: -7.58 CamSpec: 7798.23 SN - Union2.1: 130.39

## 9.29 base\_nnu\_planck\_lowl\_lowLike\_Union2\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022316	$0.02245 \pm 0.00038$	$r_{143 \times 217}^{\text{CIB}}$	0.556	$0.49^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.0977	$0.1039^{+0.0072}_{-0.0083}$
$\Omega_c h^2$	0.1189	$0.1232 \pm 0.0053$	$\gamma^{\text{CIB}}$	0.556	$0.53 \pm 0.13$	$Y_P$	0.24898	$0.2529 \pm 0.0049$
$100\theta_{\text{MC}}$	1.04143	$1.04102 \pm 0.00073$	$c_{100}$	1.000598	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8364	$1.851 \pm 0.024$
$\tau$	0.0941	$0.096^{+0.013}_{-0.016}$	$c_{217}$	0.99636	$0.9965 \pm 0.0014$	Age/Gyr	13.692	$13.41 \pm 0.36$
$N_{\text{eff}}$	3.133	$3.44 \pm 0.37$	$\xi^{\text{tSZ-CIB}}$	0.112	$< 0.616$	$z_*$	1090.08	$1090.58 \pm 0.65$
$n_s$	0.9714	$0.978 \pm 0.015$	$A^{\text{kSZ}}$	1.50	—	$r_*$	144.30	$141.7 \pm 3.2$
$\ln(10^{10} A_s)$	3.0985	$3.110 \pm 0.033$	$\beta_1^1$	0.69	$0.56 \pm 0.58$	$100\theta_*$	1.04150	$1.04090 \pm 0.00090$
$A_{100}^{\text{PS}}$	148	$182 \pm 60$	$\Omega_\Lambda$	0.7010	$0.708 \pm 0.017$	$z_{\text{drag}}$	1059.89	$1060.7 \pm 1.4$
$A_{143}^{\text{PS}}$	61.6	$56 \pm 10$	$\Omega_m$	0.2990	$0.292 \pm 0.017$	$r_{\text{drag}}$	146.99	$144.3 \pm 3.3$
$A_{217}^{\text{PS}}$	118.5	$104^{+20}_{-20}$	$\sigma_8$	0.8299	$0.840 \pm 0.020$	$k_D$	0.14050	$0.1424 \pm 0.0024$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.39	$11.6 \pm 1.2$	$100\theta_D$	0.16139	$0.16214 \pm 0.00085$
$A_{217}^{\text{CIB}}$	24.9	$31^{+7}_{-10}$	$H_0$	68.88	$70.9^{+2.8}_{-3.1}$	$z_{\text{eq}}$	3336	$3307 \pm 64$
$A^{\text{tSZ}}_{143}$	6.41	—	$10^9 A_s$	2.217	$2.242^{+0.069}_{-0.080}$	$100\theta_{\text{eq}}$	0.8257	$0.832 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.907	$> 0.839$	$\Omega_m h^2$	0.1419	$0.1463 \pm 0.0055$	$r_{\text{drag}}/D_V(0.57)$	0.07232	$0.0728 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 9945.70$ ; R-1 = 0.01268

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.33 lensing: 9.61 lowl: -8.11 CamSpec: 7799.22 SN - Union2.1: 130.14

### 9.30 base\_nnu\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02231 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.397	$0.47^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.0967	$0.1031^{+0.0058}_{-0.0067}$
$\Omega_c h^2$	0.1190	$0.1244 \pm 0.0052$	$\gamma^{\text{CIB}}$	0.559	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.24826	$0.2525 \pm 0.0039$
$100\theta_{\text{MC}}$	1.04141	$1.04091 \pm 0.00074$	$c_{100}$	1.000592	$1.00057 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8359	$1.856 \pm 0.024$
$\tau$	0.0937	$0.094^{+0.013}_{-0.015}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	13.756	$13.46 \pm 0.28$
$N_{\text{eff}}$	3.082	$3.41^{+0.29}_{-0.33}$	$\xi^{\text{tSZ-CIB}}$	0.160	$< 0.618$	$z_*$	1090.17	$1090.83 \pm 0.66$
$n_s$	0.9682	$0.974 \pm 0.010$	$A^{\text{kSZ}}$	0.98	—	$r_*$	144.62	$141.7 \pm 2.7$
$\ln(10^{10} A_s)$	3.0976	$3.109 \pm 0.030$	$\beta_1^1$	0.73	$0.60 \pm 0.57$	$100\theta_*$	1.04154	$1.04081 \pm 0.00088$
$A_{100}^{\text{PS}}$	142	$182 \pm 60$	$\Omega_\Lambda$	0.6947	$0.699 \pm 0.011$	$z_{\text{drag}}$	1059.59	$1060.5 \pm 1.1$
$A_{143}^{\text{PS}}$	60.8	$57 \pm 10$	$\Omega_m$	0.3053	$0.301 \pm 0.011$	$r_{\text{drag}}$	147.34	$144.3 \pm 2.8$
$A_{217}^{\text{PS}}$	121.4	$105^{+20}_{-20}$	$\sigma_8$	0.8301	$0.844 \pm 0.020$	$k_D$	0.14024	$0.1424 \pm 0.0021$
$A_{143}^{\text{CIB}}$	0.0	$< 11.9$	$z_{\text{re}}$	11.39	$11.5 \pm 1.2$	$100\theta_D$	0.16134	$0.16216 \pm 0.00075$
$A_{217}^{\text{CIB}}$	24.4	$31^{+7}_{-10}$	$H_0$	68.17	$70.0 \pm 1.9$	$z_{\text{eq}}$	3358.2	$3343 \pm 42$
$A^{\text{tSZ}}_{143}$	7.07	—	$10^9 A_s$	2.214	$2.240 \pm 0.067$	$100\theta_{\text{eq}}$	0.8212	$0.8242 \pm 0.0080$
$r_{143 \times 217}^{\text{PS}}$	0.932	$> 0.843$	$\Omega_m h^2$	0.1419	$0.1473 \pm 0.0053$	$r_{\text{drag}}/D_V(0.57)$	0.07197	$0.07216 \pm 0.00062$

Best-fit  $\chi^2_{\text{eff}} = 9937.43$ ; R-1 = 0.01296

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.82 6DF: 0.04 DR9: 0.45 CMB - lowLike: 2014.39 lowl: -7.76 CamSpec: 7798.71 SN - Union2.1: 130.28

### 9.31 base\_nnu\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022372	$0.02262 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.620	$0.52^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.1001	$0.1099 \pm 0.0055$
$\Omega_c h^2$	0.12043	$0.1276 \pm 0.0049$	$\gamma^{\text{CIB}}$	0.558	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.25062	$0.2568 \pm 0.0033$
$100\theta_{\text{MC}}$	1.04138	$1.04069 \pm 0.00071$	$c_{100}$	1.000592	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8430	$1.870 \pm 0.021$
$\tau$	0.0910	$0.0998^{+0.014}_{-0.016}$	$c_{217}$	0.99644	$0.9965 \pm 0.0014$	Age/Gyr	13.571	$13.14 \pm 0.23$
$N_{\text{eff}}$	3.256	$3.74 \pm 0.27$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.601$	$z_*$	1090.26	$1091.02 \pm 0.66$
$n_s$	0.9750	$0.988 \pm 0.010$	$A^{\text{kSZ}}$	2.31	—	$r_*$	143.28	$139.2 \pm 2.3$
$\ln(10^{10} A_s)$	3.0959	$3.128^{+0.029}_{-0.033}$	$\beta_1^1$	0.70	$0.64 \pm 0.57$	$100\theta_*$	1.04136	$1.04035 \pm 0.00082$
$A_{100}^{\text{PS}}$	165	$191 \pm 60$	$\Omega_\Lambda$	0.7056	$0.715^{+0.014}_{-0.013}$	$z_{\text{drag}}$	1060.20	$1061.67 \pm 0.96$
$A_{143}^{\text{PS}}$	67.8	$58 \pm 10$	$\Omega_m$	0.2944	$0.285 \pm 0.013$	$r_{\text{drag}}$	145.93	$141.7 \pm 2.4$
$A_{217}^{\text{PS}}$	117.2	$104^{+20}_{-20}$	$\sigma_8$	0.8304	$0.856 \pm 0.019$	$k_D$	0.14120	$0.1443 \pm 0.0018$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.16	$12.1 \pm 1.2$	$100\theta_D$	0.16171	$0.16280 \pm 0.00068$
$A_{217}^{\text{CIB}}$	26.3	$33^{+7}_{-10}$	$H_0$	69.80	$72.8 \pm 1.9$	$z_{\text{eq}}$	3319	$3284 \pm 53$
$A^{\text{tSZ}}_{143}$	5.43	—	$10^9 A_s$	2.211	$2.284^{+0.065}_{-0.076}$	$100\theta_{\text{eq}}$	0.8290	$0.836 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.873	$> 0.837$	$\Omega_m h^2$	0.14345	$0.1508 \pm 0.0049$	$r_{\text{drag}}/D_V(0.57)$	0.07259	$0.07311 \pm 0.00084$

Best-fit  $\chi^2_{\text{eff}} = 9939.09$ ; R-1 = 0.01739

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.15 lowl: -8.52 CamSpec: 7800.11 Hubble - HST: 2.79 SN - Union2.1: 130.05



### 9.32 base\_nnu\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022400	$0.02261 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.669	$0.50^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.1010	$0.1097 \pm 0.0055$
$\Omega_c h^2$	0.12131	$0.1276 \pm 0.0048$	$\gamma^{\text{CIB}}$	0.586	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.25118	$0.2567 \pm 0.0034$
$100\theta_{\text{MC}}$	1.04126	$1.04065 \pm 0.00072$	$c_{100}$	1.000585	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8479	$1.870 \pm 0.021$
$\tau$	0.0904	$0.099^{+0.013}_{-0.016}$	$c_{217}$	0.99648	$0.9965 \pm 0.0014$	Age/Gyr	13.533	$13.15 \pm 0.24$
$N_{\text{eff}}$	3.298	$3.73 \pm 0.27$	$\xi^{\text{tSZ-CIB}}$	0.223	$< 0.606$	$z_*$	1090.34	$1091.03 \pm 0.66$
$n_s$	0.9770	$0.987 \pm 0.011$	$A^{\text{kSZ}}$	0.6	—	$r_*$	142.83	$139.2 \pm 2.3$
$\ln(10^{10} A_s)$	3.0975	$3.127^{+0.029}_{-0.032}$	$\beta_1^1$	0.69	$0.65 \pm 0.58$	$100\theta_*$	1.04122	$1.04033 \pm 0.00082$
$A_{100}^{\text{PS}}$	171	$190 \pm 60$	$\Omega_\Lambda$	0.7051	$0.714 \pm 0.014$	$z_{\text{drag}}$	1060.39	$1061.64 \pm 0.96$
$A_{143}^{\text{PS}}$	71.6	$58 \pm 10$	$\Omega_m$	0.2949	$0.286 \pm 0.014$	$r_{\text{drag}}$	145.46	$141.7 \pm 2.4$
$A_{217}^{\text{PS}}$	119.0	$104^{+20}_{-20}$	$\sigma_8$	0.8332	$0.856 \pm 0.019$	$k_D$	0.14156	$0.1443 \pm 0.0018$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.13	$12.0 \pm 1.2$	$100\theta_D$	0.16178	$0.16278 \pm 0.00068$
$A_{217}^{\text{CIB}}$	27.0	$32^{+7}_{-10}$	$H_0$	69.96	$72.7 \pm 2.0$	$z_{\text{eq}}$	3322	$3288 \pm 55$
$A^{\text{tSZ}}_{143}$	4.86	—	$10^9 A_s$	2.214	$2.281^{+0.063}_{-0.075}$	$100\theta_{\text{eq}}$	0.8285	$0.835 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.922	$> 0.839$	$\Omega_m h^2$	0.14435	$0.1509 \pm 0.0049$	$r_{\text{drag}}/D_V(0.57)$	0.07254	$0.07304 \pm 0.00088$

Best-fit  $\chi^2_{\text{eff}} = 9809.00$ ; R-1 = 0.00810

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.17 lowl: -8.67 CamSpec: 7800.60 Hubble - HST: 2.57

### 9.33 base\_nnu\_planck\_lowl\_lowLike\_HST\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022543	$0.02263 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.858	$0.50^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.1005	$0.1079^{+0.0052}_{-0.0058}$
$\Omega_c h^2$	0.11963	$0.1255 \pm 0.0045$	$\gamma^{\text{CIB}}$	0.569	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.25078	$0.2556 \pm 0.0033$
$100\theta_{\text{MC}}$	1.04147	$1.04082 \pm 0.00070$	$c_{100}$	1.000621	$1.00059 \pm 0.00041$	$10^9 A_s e^{-2\tau}$	1.8414	$1.862 \pm 0.019$
$\tau$	0.0919	$0.099^{+0.013}_{-0.015}$	$c_{217}$	0.99645	$0.9965 \pm 0.0014$	Age/Gyr	13.541	$13.21 \pm 0.23$
$N_{\text{eff}}$	3.262	$3.64 \pm 0.26$	$\xi^{\text{tSZ-CIB}}$	0.250	$< 0.612$	$z_*$	1089.99	$1090.74 \pm 0.62$
$n_s$	0.9790	$0.986 \pm 0.010$	$A^{\text{kSZ}}$	1.35	—	$r_*$	143.32	$140.1 \pm 2.3$
$\ln(10^{10} A_s)$	3.0969	$3.122^{+0.026}_{-0.030}$	$\beta_1^1$	0.69	$0.61 \pm 0.57$	$100\theta_*$	1.04144	$1.04055 \pm 0.00080$
$A_{100}^{\text{PS}}$	154	$187 \pm 60$	$\Omega_\Lambda$	0.7114	$0.717^{+0.014}_{-0.012}$	$z_{\text{drag}}$	1060.54	$1061.46 \pm 0.96$
$A_{143}^{\text{PS}}$	64.0	$57 \pm 10$	$\Omega_m$	0.2886	$0.283^{+0.012}_{-0.014}$	$r_{\text{drag}}$	145.92	$142.6 \pm 2.3$
$A_{217}^{\text{PS}}$	118.8	$104^{+20}_{-20}$	$\sigma_8$	0.8292	$0.849 \pm 0.016$	$k_D$	0.14132	$0.1436 \pm 0.0018$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.17	$11.9 \pm 1.1$	$100\theta_D$	0.16154	$0.16253 \pm 0.00067$
$A_{217}^{\text{CIB}}$	25.3	$32^{+7}_{-10}$	$H_0$	70.34	$72.5 \pm 1.9$	$z_{\text{eq}}$	3301.4	$3277 \pm 50$
$A^{\text{tSZ}}_{143}$	5.80	—	$10^9 A_s$	2.213	$2.270^{+0.058}_{-0.069}$	$100\theta_{\text{eq}}$	0.8329	$0.838 \pm 0.010$
$r_{143 \times 217}^{\text{PS}}$	0.929	$> 0.838$	$\Omega_m h^2$	0.14282	$0.1488 \pm 0.0045$	$r_{\text{drag}}/D_V(0.57)$	0.07292	$0.07322 \pm 0.00080$

Best-fit  $\chi^2_{\text{eff}} = 9818.60$ ; R-1 = 0.00899

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.12 lensing: 9.47 lowl: -8.81 CamSpec: 7801.29 Hubble - HST: 2.10

### 9.34 base\_nnu\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022335	$0.02246 \pm 0.00026$	$r_{143 \times 217}^{\text{CIB}}$	0.612	$0.49^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.0979	$0.1074^{+0.0049}_{-0.0055}$
$\Omega_c h^2$	0.11892	$0.1274 \pm 0.0046$	$\gamma^{\text{CIB}}$	0.557	$0.54^{+0.13}_{-0.12}$	$Y_P$	0.24904	$0.2552 \pm 0.0031$
$100\theta_{\text{MC}}$	1.04156	$1.04062 \pm 0.00070$	$c_{100}$	1.000603	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8361	$1.870 \pm 0.020$
$\tau$	0.0934	$0.095 \pm 0.013$	$c_{217}$	0.99644	$0.9965 \pm 0.0014$	Age/Gyr	13.683	$13.27 \pm 0.22$
$N_{\text{eff}}$	3.137	$3.62 \pm 0.25$	$\xi^{\text{tSZ-CIB}}$	0.118	$< 0.612$	$z_*$	1090.06	$1091.10 \pm 0.62$
$n_s$	0.9716	$0.9809 \pm 0.0086$	$A^{\text{kSZ}}$	1.19	—	$r_*$	144.27	$139.9 \pm 2.2$
$\ln(10^{10} A_s)$	3.0970	$3.119 \pm 0.028$	$\beta_1^1$	0.65	$0.66 \pm 0.57$	$100\theta_*$	1.04163	$1.04037 \pm 0.00080$
$A_{100}^{\text{PS}}$	166	$188 \pm 60$	$\Omega_\Lambda$	0.7018	$0.7042 \pm 0.0097$	$z_{\text{drag}}$	1059.93	$1061.19 \pm 0.89$
$A_{143}^{\text{PS}}$	68.1	$58 \pm 10$	$\Omega_m$	0.2982	$0.2958 \pm 0.0097$	$r_{\text{drag}}$	146.95	$142.4 \pm 2.3$
$A_{217}^{\text{PS}}$	117.6	$105^{+20}_{-20}$	$\sigma_8$	0.8285	$0.853 \pm 0.018$	$k_D$	0.14054	$0.1438 \pm 0.0018$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.32	$11.7 \pm 1.1$	$100\theta_D$	0.16139	$0.16259 \pm 0.00066$
$A_{217}^{\text{CIB}}$	26.0	$32^{+7}_{-10}$	$H_0$	68.99	$71.3 \pm 1.5$	$z_{\text{eq}}$	3334.7	$3325 \pm 38$
$A^{\text{tSZ}}_{143}$	4.95	—	$10^9 A_s$	2.213	$2.263^{+0.060}_{-0.069}$	$100\theta_{\text{eq}}$	0.8260	$0.8279 \pm 0.0074$
$r_{143 \times 217}^{\text{PS}}$	0.887	$> 0.840$	$\Omega_m h^2$	0.14190	$0.1505 \pm 0.0047$	$r_{\text{drag}}/D_V(0.57)$	0.07238	$0.07244 \pm 0.00057$

Best-fit  $\chi^2_{\text{eff}} = 9811.95$ ; R-1 = 0.01612

$\chi^2_{\text{eff}}$ : BAO - DR9: 1.04 DR7: 0.26 6DF: 0.15 CMB - lowLike: 2014.28 lowl: -8.18 CamSpec: 7799.87 Hubble - HST: 4.02

# 10 nnu+meffsterile

## 10.1 base\_nnu\_meffsterile\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022092	$0.02230^{+0.00031}_{-0.00037}$	$\beta_1^1$	0.47	$0.46 \pm 0.56$	$z_{\text{re}}$	11.49	$11.6 \pm 1.2$
$\Omega_c h^2$	0.1224	$0.118^{+0.014}_{-0.0030}$	$A_{148}^{\text{PS, ACT}}$	10.49	$10.46 \pm 0.60$	$H_0$	67.39	$68.5^{+1.3}_{-2.6}$
$100\theta_{\text{MC}}$	1.04098	$1.04100 \pm 0.00072$	$A_{218}^{\text{PS, ACT}}$	76.41	$76.6 \pm 4.5$	$10^9 A_s$	2.223	$2.236^{+0.064}_{-0.079}$
$\tau$	0.0931	$0.095 \pm 0.014$	$A_{95}^{\text{PS, SPT}}$	7.32	$7.49^{+1.3}_{-1.6}$	$\Omega_m h^2$	0.1459	$0.1478^{+0.0045}_{-0.0064}$
$m_{\nu, \text{sterile}}^{\text{eff}}$	0.067	$< 0.447$	$A_{150}^{\text{PS, SPT}}$	9.96	$9.94 \pm 0.51$	$\Omega_m h^3$	0.09831	$0.1012^{+0.0024}_{-0.0066}$
$N_{\text{eff}}$	3.187	$< 3.44$	$A_{220}^{\text{PS, SPT}}$	73.51	$74.0 \pm 4.5$	$Y_{\text{P}}$	0.24959	$< 0.253$
$n_s$	0.9619	$0.9679^{+0.0095}_{-0.016}$	$r_{95 \times 150}^{\text{PS}}$	0.809	$0.834 \pm 0.089$	$10^9 A_s e^{-2\tau}$	1.8451	$1.849^{+0.018}_{-0.024}$
$\ln(10^{10} A_s)$	3.1014	$3.107^{+0.030}_{-0.035}$	$r_{95 \times 220}^{\text{PS}}$	0.587	$0.59^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00136	$< 0.00540$
$A_{100}^{\text{PS}}$	213	$220 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9219	$0.939 \pm 0.023$	Age/Gyr	13.717	$13.58^{+0.31}_{-0.12}$
$A_{143}^{\text{PS}}$	75.9	$77 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.414	$0.44 \pm 0.19$	$z_*$	1090.76	$1090.77^{+0.62}_{-0.69}$
$A_{217}^{\text{PS}}$	61.7	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	143.27	$142.1^{+3.1}_{-1.6}$
$A_{143}^{\text{CIB}}$	3.09	$3.23 \pm 0.80$	$y_{148}^{\text{ACTs}}$	0.9904	$0.9903 \pm 0.0074$	$100\theta_*$	1.04106	$1.04098^{+0.00090}_{-0.00078}$
$A_{217}^{\text{CIB}}$	50.5	$49.1 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0025	$1.003 \pm 0.013$	$z_{\text{drag}}$	1059.67	$1060.37^{+0.85}_{-1.3}$
$A_{143}^{\text{tSZ}}$	3.42	$2.38^{+0.97}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9866	$0.9863 \pm 0.0073$	$r_{\text{drag}}$	146.01	$144.8^{+3.3}_{-1.7}$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.828 \pm 0.068$	$y_{217}^{\text{ACTe}}$	0.9616	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14118	$0.1422^{+0.0014}_{-0.0024}$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9809	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16170	$0.16188^{+0.00048}_{-0.00080}$
$\gamma^{\text{CIB}}$	0.639	$0.629 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9834	$0.9838 \pm 0.0099$	$z_{\text{eq}}$	3389	$3233^{+220}_{-30}$
$c_{100}$	1.000576	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0170	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8152	$0.8517^{+0.0036}_{-0.051}$
$c_{217}$	0.99742	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.6788	$0.684 \pm 0.021$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07108	$0.0714 \pm 0.0012$
$\xi^{\text{tSZ-CIB}}$	0.163	$< 0.473$	$\Omega_{\text{m}}$	0.3212	$0.316 \pm 0.021$			
$A^{\text{kSZ}}$	4.20	$5.89^{+2.7}_{-1.7}$	$\sigma_8$	0.8234	$0.810^{+0.035}_{-0.025}$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.13$ ; R-1 = 0.02818

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.57 lowl: -6.64 CamSpec: 7808.01 highL: 693.05

## 10.2 base\_nnu\_meffsterile\_planck\_lowl\_lowLike\_highL\_post\_lensing

Best-fit  $\chi^2_{\text{eff}} = 10517.04$

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.43 lensing: 9.13 lowl: -7.66 CamSpec: 7808.49 highL: 692.51

### 10.3 base\_nnu\_meffsterile\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022214	$0.02232^{+0.00027}_{-0.00031}$	$\beta_1$	0.38	$0.42 \pm 0.56$	$z_{\text{re}}$	11.60	$11.6 \pm 1.2$
$\Omega_c h^2$	0.1200	$0.115^{+0.016}_{-0.023}$	$A_{148}^{\text{PS, ACT}}$	10.30	$10.46 \pm 0.60$	$H_0$	68.35	$68.9^{+1.0}_{-1.8}$
$100\theta_{\text{MC}}$	1.04136	$1.04120^{+0.00077}_{-0.00064}$	$A_{218}^{\text{PS, ACT}}$	76.30	$76.7^{+4.8}_{-4.3}$	$10^9 A_s$	2.222	$2.232^{+0.064}_{-0.079}$
$\tau$	0.0958	$0.096 \pm 0.014$	$A_{95}^{\text{PS, SPT}}$	7.37	$7.52^{+1.3}_{-1.6}$	$\Omega_m h^2$	0.14283	$0.1456^{+0.0032}_{-0.0058}$
$m_{\nu, \text{sterile}}^{\text{eff}}$	0.000	$< 0.508$	$A_{150}^{\text{PS, SPT}}$	9.80	$9.96 \pm 0.51$	$\Omega_m h^3$	0.09762	$0.1003^{+0.0022}_{-0.0059}$
$N_{\text{eff}}$	3.129	$< 3.38$	$A_{220}^{\text{PS, SPT}}$	73.06	$74.1 \pm 4.5$	$Y_{\text{P}}$	0.24888	$< 0.252$
$n_s$	0.9645	$0.9688^{+0.0082}_{-0.013}$	$r_{95 \times 150}^{\text{PS}}$	0.792	$0.833 \pm 0.090$	$10^9 A_s e^{-2\tau}$	1.8347	$1.842^{+0.013}_{-0.024}$
$\ln(10^{10} A_s)$	3.1011	$3.105^{+0.030}_{-0.035}$	$r_{95 \times 220}^{\text{PS}}$	0.546	$0.59^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00065	$< 0.00605$
$A_{100}^{\text{PS}}$	202	$217 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9126	$0.938 \pm 0.024$	Age/Gyr	13.714	$13.60^{+0.27}_{-0.12}$
$A_{143}^{\text{PS}}$	73.2	$76 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	$z_*$	1090.30	$1090.51^{+0.47}_{-0.61}$
$A_{217}^{\text{PS}}$	61.1	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.838	$0.85 \pm 0.20$	$r_*$	144.14	$142.8^{+2.9}_{-1.3}$
$A_{143}^{\text{CIB}}$	3.15	$3.22 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9912	$0.9909 \pm 0.0074$	$100\theta_*$	1.04144	$1.04120^{+0.00090}_{-0.00068}$
$A_{217}^{\text{CIB}}$	51.8	$49.2 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0029	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.70	$1060.24^{+0.75}_{-1.2}$
$A_{143}^{\text{tSZ}}$	4.42	$2.39^{+0.98}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9875	$0.9869 \pm 0.0072$	$r_{\text{drag}}$	146.85	$145.5^{+3.0}_{-1.4}$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.826 \pm 0.069$	$y_{217}^{\text{ACTe}}$	0.9611	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14058	$0.1416^{+0.0011}_{-0.0022}$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9837	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.16147	$0.16177^{+0.00044}_{-0.00076}$
$\gamma^{\text{CIB}}$	0.653	$0.631 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9840	$0.9848 \pm 0.0099$	$z_{\text{eq}}$	3360	$3186^{+260}_{-16}$
$c_{100}$	1.000593	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0162	$1.023 \pm 0.023$	$100\theta_{\text{eq}}$	0.8208	$0.8625^{+0.0011}_{-0.062}$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.6942	$0.693 \pm 0.011$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07194	$0.07184 \pm 0.00063$
$\xi^{\text{tSZ-CIB}}$	0.018	$< 0.461$	$\Omega_{\text{m}}$	0.3058	$0.307 \pm 0.011$			
$A^{\text{kSZ}}$	2.24	$5.83^{+2.7}_{-1.7}$	$\sigma_8$	0.8322	$0.812^{+0.029}_{-0.023}$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.31$ ; R-1 = 0.03854

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.88 DR9: 0.42 6DF: 0.06 CMB - lowLike: 2014.57 lowl: -7.02 CamSpec: 7808.35 highL: 692.95

## 10.4 base\_nnu\_meffsterile\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022357	$0.02260 \pm 0.00030$	$\beta_1^1$	0.39	$0.50 \pm 0.56$	$z_{\text{re}}$	11.41	$12.2 \pm 1.2$
$\Omega_c h^2$	0.1212	$0.1239^{+0.0078}_{-0.0040}$	$A_{148}^{\text{PS, ACT}}$	10.49	$10.45 \pm 0.60$	$H_0$	69.81	$71.3 \pm 2.1$
$100\theta_{\text{MC}}$	1.04125	$1.04089 \pm 0.00075$	$A_{218}^{\text{PS, ACT}}$	76.68	$76.5 \pm 4.5$	$10^9 A_s$	2.219	$2.277 \pm 0.072$
$\tau$	0.0935	$0.101 \pm 0.014$	$A_{95}^{\text{PS, SPT}}$	7.24	$7.44^{+1.3}_{-1.6}$	$\Omega_m h^2$	0.1442	$0.1496^{+0.0060}_{-0.0054}$
$m_{\nu, \text{sterile}}^{\text{eff}}$	0.000	$< 0.147$	$A_{150}^{\text{PS, SPT}}$	9.968	$9.90 \pm 0.51$	$\Omega_m h^3$	0.1007	$0.1067 \pm 0.0061$
$N_{\text{eff}}$	3.286	$< 3.74$	$A_{220}^{\text{PS, SPT}}$	73.84	$73.8 \pm 4.4$	$Y_{\text{P}}$	0.25100	$0.2551^{+0.0041}_{-0.0035}$
$n_s$	0.9713	$0.983 \pm 0.012$	$r_{95 \times 150}^{\text{PS}}$	0.814	$0.837^{+0.11}_{-0.087}$	$10^9 A_s e^{-2\tau}$	1.8409	$1.858^{+0.026}_{-0.023}$
$\ln(10^{10} A_s)$	3.0998	$3.125 \pm 0.031$	$r_{95 \times 220}^{\text{PS}}$	0.588	$0.60^{+0.12}_{-0.13}$	$\Omega_\nu h^2$	0.00065	$< 0.00221$
$A_{100}^{\text{PS}}$	213	$225 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9211	$0.939 \pm 0.023$	Age/Gyr	13.550	$13.29^{+0.26}_{-0.30}$
$A_{143}^{\text{PS}}$	75.8	$79.0 \pm 8.6$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	$z_*$	1090.38	$1090.76 \pm 0.67$
$A_{217}^{\text{PS}}$	62.5	$65 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.20$	$r_*$	142.94	$140.3^{+2.4}_{-3.0}$
$A_{143}^{\text{CIB}}$	3.11	$3.23 \pm 0.80$	$y_{148}^{\text{ACTs}}$	0.9904	$0.9894 \pm 0.0075$	$100\theta_*$	1.04122	$1.04068 \pm 0.00088$
$A_{217}^{\text{CIB}}$	50.14	$48.9^{+4.6}_{-5.3}$	$y_{217}^{\text{ACTs}}$	1.0023	$1.002 \pm 0.013$	$z_{\text{drag}}$	1060.28	$1061.4 \pm 1.1$
$A_{143}^{\text{tSZ}}$	3.49	$2.29^{+0.93}_{-1.7}$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9853 \pm 0.0074$	$r_{\text{drag}}$	145.59	$142.8^{+2.5}_{-3.1}$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.831^{+0.064}_{-0.074}$	$y_{217}^{\text{ACTe}}$	0.9611	$0.961 \pm 0.010$	$k_{\text{D}}$	0.14143	$0.1436^{+0.0024}_{-0.0019}$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{95}^{\text{SPT}}$	0.9804	$0.978^{+0.018}_{-0.021}$	$100\theta_{\text{D}}$	0.16180	$0.16240 \pm 0.00073$
$\gamma^{\text{CIB}}$	0.631	$0.623 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9834	$0.982 \pm 0.010$	$z_{\text{eq}}$	3324	$3255^{+99}_{-41}$
$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0179	$1.020 \pm 0.023$	$100\theta_{\text{eq}}$	0.8280	$0.8441^{+0.0074}_{-0.023}$
$c_{217}$	0.99732	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.7041	$0.705^{+0.018}_{-0.015}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07249	$0.07253 \pm 0.00096$
$\xi^{\text{tSZ-CIB}}$	0.158	$< 0.495$	$\Omega_{\text{m}}$	0.2959	$0.295^{+0.015}_{-0.018}$			
$A^{\text{kSZ}}$	4.10	$6.07^{+2.6}_{-1.6}$	$\sigma_8$	0.8326	$0.828^{+0.033}_{-0.024}$			

Best-fit  $\chi_{\text{eff}}^2 = 10511.56$ ; R-1 = 0.07211

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.27 lowl: -8.01 CamSpec: 7809.06 highL: 693.27 Hubble - HST: 2.77

# 11 nnu+mnu

## 11.1 base\_nnu\_mnu\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022138	$0.02221 \pm 0.00045$	$r_{143 \times 217}^{\text{CIB}}$	0.598	$0.48^{+0.26}_{-0.21}$	$Y_P$	0.24828	$0.2527 \pm 0.0049$
$\Omega_c h^2$	0.1203	$0.1254 \pm 0.0053$	$\gamma^{\text{CIB}}$	0.553	$0.54 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8425	$1.859 \pm 0.024$
$100\theta_{\text{MC}}$	1.04132	$1.04065 \pm 0.00076$	$c_{100}$	1.000595	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00008	$< 0.00360$
$\tau$	0.0918	$0.094^{+0.013}_{-0.016}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	13.741	$13.57^{+0.40}_{-0.46}$
$\Sigma m_\nu$	0.008	$< 0.335$	$\xi^{\text{tSZ-CIB}}$	0.101	$< 0.612$	$z_*$	1090.38	$1091.13^{+0.69}_{-0.78}$
$N_{\text{eff}}$	3.086	$3.43^{+0.36}_{-0.41}$	$A^{\text{kSZ}}$	0.4	—	$r_*$	144.32	$141.3 \pm 3.1$
$n_s$	0.9652	$0.972 \pm 0.017$	$\beta_1^1$	0.75	$0.63 \pm 0.57$	$100\theta_*$	1.04140	$1.04065 \pm 0.00089$
$\ln(10^{10} A_s)$	3.0972	$3.110^{+0.031}_{-0.036}$	$\Omega_\Lambda$	0.6928	$0.668^{+0.059}_{-0.025}$	$z_{\text{drag}}$	1059.51	$1060.4 \pm 1.5$
$A_{100}^{\text{PS}}$	141	$187 \pm 60$	$\Omega_m$	0.3072	$0.332^{+0.025}_{-0.059}$	$r_{\text{drag}}$	147.06	$144.0 \pm 3.2$
$A_{143}^{\text{PS}}$	61.9	$57 \pm 10$	$\sigma_8$	0.846	$0.800^{+0.075}_{-0.033}$	$k_D$	0.14046	$0.1426 \pm 0.0024$
$A_{217}^{\text{PS}}$	123.8	$105^{+20}_{-20}$	$z_{\text{re}}$	11.27	$11.6 \pm 1.3$	$100\theta_D$	0.16140	$0.16227 \pm 0.00084$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	68.13	$67.8^{+5.2}_{-3.8}$	$z_{\text{eq}}$	3386	$3357 \pm 83$
$A_{217}^{\text{CIB}}$	24.2	$32^{+7}_{-10}$	$10^9 A_s$	2.214	$2.244^{+0.068}_{-0.082}$	$100\theta_{\text{eq}}$	0.8158	$0.822 \pm 0.016$
$A_{143}^{\text{tSZ}}$	7.40	—	$\Omega_m h^2$	0.1426	$0.1507^{+0.0057}_{-0.0068}$	$r_{\text{drag}}/D_V(0.57)$	0.07186	$0.0708^{+0.0027}_{-0.0016}$
$r_{143 \times 217}^{\text{PS}}$	0.921	$> 0.843$	$\Omega_m h^3$	0.0971	$0.1022^{+0.0078}_{-0.0087}$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.01$ ; R-1 = 0.01063

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.29 lowl: -7.15 CamSpec: 7797.32



## 11.2 base\_nnu\_mnu\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022303	$0.02204 \pm 0.00049$	$r_{143 \times 217}^{\text{CIB}}$	0.282	$0.47^{+0.26}_{-0.23}$	$Y_P$	0.2482	$0.2505 \pm 0.0049$
$\Omega_c h^2$	0.1181	$0.1240 \pm 0.0051$	$\gamma^{\text{CIB}}$	0.541	$0.54 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8327	$1.851 \pm 0.023$
$100\theta_{\text{MC}}$	1.04149	$1.04064 \pm 0.00079$	$c_{100}$	1.000597	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00029	$< 0.00647$
$\tau$	0.0937	$0.094^{+0.013}_{-0.016}$	$c_{217}$	0.99633	$0.9965 \pm 0.0014$	Age/Gyr	13.727	$13.83 \pm 0.46$
$\Sigma m_\nu$	0.027	$< 0.602$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.618$	$z_*$	1089.97	$1091.14^{+0.75}_{-0.93}$
$N_{\text{eff}}$	3.076	$3.27^{+0.34}_{-0.41}$	$A^{\text{kSZ}}$	0.6	—	$r_*$	144.81	$142.5 \pm 3.0$
$n_s$	0.9696	$0.963 \pm 0.018$	$\beta_1^1$	0.66	$0.64 \pm 0.56$	$100\theta_*$	1.04160	$1.04082 \pm 0.00089$
$\ln(10^{10} A_s)$	3.0957	$3.107 \pm 0.032$	$\Omega_\Lambda$	0.703	$0.633^{+0.088}_{-0.042}$	$z_{\text{drag}}$	1059.74	$1059.8 \pm 1.5$
$A_{100}^{\text{PS}}$	138	$183 \pm 60$	$\Omega_m$	0.297	$0.367^{+0.042}_{-0.088}$	$r_{\text{drag}}$	147.51	$145.2 \pm 3.2$
$A_{143}^{\text{PS}}$	60.1	$56 \pm 10$	$\sigma_8$	0.837	$0.759^{+0.085}_{-0.054}$	$k_D$	0.14016	$0.1418 \pm 0.0023$
$A_{217}^{\text{PS}}$	120.2	$105^{+20}_{-20}$	$z_{\text{re}}$	11.32	$11.7 \pm 1.2$	$100\theta_D$	0.16123	$0.16187 \pm 0.00082$
$A_{143}^{\text{CIB}}$	0.0	$< 12.0$	$H_0$	68.9	$64.8 \pm 5.1$	$z_{\text{eq}}$	3343	$3393 \pm 88$
$A_{217}^{\text{CIB}}$	24.3	$31^{+6}_{-10}$	$10^9 A_s$	2.210	$2.236^{+0.068}_{-0.077}$	$100\theta_{\text{eq}}$	0.8243	$0.815 \pm 0.017$
$A^{\text{tSZ}}_{143}$	7.20	—	$\Omega_m h^2$	0.1407	$0.1511^{+0.0062}_{-0.0079}$	$r_{\text{drag}}/D_V(0.57)$	0.07246	$0.0693^{+0.0034}_{-0.0025}$
$r_{143 \times 217}^{\text{PS}}$	0.889	$> 0.844$	$\Omega_m h^3$	0.0969	$0.0979^{+0.0073}_{-0.0092}$			

Best-fit  $\chi^2_{\text{eff}} = 9815.61$ ; R-1 = 0.03623

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.27 lensing: 9.90 lowl: -7.87 CamSpec: 7798.68

### 11.3 base\_nnu\_mnu\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022124	$0.02233 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.767	$0.48^{+0.26}_{-0.22}$	$Y_P$	0.24787	$0.2529 \pm 0.0039$
$\Omega_c h^2$	0.11933	$0.1245 \pm 0.0049$	$\gamma^{\text{CIB}}$	0.592	$0.54 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8379	$1.857 \pm 0.022$
$100\theta_{\text{MC}}$	1.04139	$1.04083 \pm 0.00073$	$c_{100}$	1.000611	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00175$
$\tau$	0.0930	$0.095^{+0.013}_{-0.015}$	$c_{217}$	0.99650	$0.9965 \pm 0.0014$	Age/Gyr	13.766	$13.46 \pm 0.27$
$\Sigma m_\nu$	0.000	$< 0.162$	$\xi^{\text{tSZ-CIB}}$	0.42	—	$z_*$	1090.28	$1090.86 \pm 0.63$
$N_{\text{eff}}$	3.056	$3.44 \pm 0.30$	$A^{\text{kSZ}}$	0.6	—	$r_*$	144.74	$141.5 \pm 2.7$
$n_s$	0.9651	$0.975 \pm 0.011$	$\beta_1^1$	0.68	$0.62 \pm 0.58$	$100\theta_*$	1.04150	$1.04075 \pm 0.00086$
$\ln(10^{10} A_s)$	3.0973	$3.110^{+0.029}_{-0.033}$	$\Omega_\Lambda$	0.6957	$0.694^{+0.013}_{-0.011}$	$z_{\text{drag}}$	1059.40	$1060.6 \pm 1.1$
$A_{100}^{\text{PS}}$	166	$184 \pm 60$	$\Omega_m$	0.3043	$0.306^{+0.011}_{-0.013}$	$r_{\text{drag}}$	147.49	$144.1 \pm 2.8$
$A_{143}^{\text{PS}}$	68.5	$57 \pm 10$	$\sigma_8$	0.8447	$0.830^{+0.031}_{-0.024}$	$k_D$	0.14011	$0.1425 \pm 0.0021$
$A_{217}^{\text{PS}}$	117.9	$105^{+20}_{-20}$	$z_{\text{re}}$	11.35	$11.6 \pm 1.2$	$100\theta_D$	0.16134	$0.16224 \pm 0.00074$
$A_{143}^{\text{CIB}}$	0.0	$< 12.2$	$H_0$	68.18	$69.7 \pm 1.8$	$z_{\text{eq}}$	3375.5	$3333^{+51}_{-46}$
$A_{217}^{\text{CIB}}$	26.5	$31^{+7}_{-10}$	$10^9 A_s$	2.214	$2.244^{+0.063}_{-0.076}$	$100\theta_{\text{eq}}$	0.8177	$0.8262^{+0.0086}_{-0.010}$
$A_{143}^{\text{tSZ}}$	4.68	—	$\Omega_m h^2$	0.1415	$0.1483 \pm 0.0053$	$r_{\text{drag}}/D_V(0.57)$	0.07202	$0.07193 \pm 0.00067$
$r_{143 \times 217}^{\text{PS}}$	0.953	$> 0.845$	$\Omega_m h^3$	0.0964	$0.1034^{+0.0056}_{-0.0063}$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.78$ ; R-1 = 0.01208

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.51 DR7: 0.73 6DF: 0.04 CMB - lowLike: 2014.33 lowl: -7.16 CamSpec: 7798.03

#### 11.4 base\_nnu\_mnu\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022594	$0.02261 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.694	$0.51^{+0.26}_{-0.20}$	$Y_P$	0.25901	$0.2569 \pm 0.0035$
$\Omega_c h^2$	0.13073	$0.1278^{+0.0046}_{-0.0052}$	$\gamma^{\text{CIB}}$	0.512	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8769	$1.871 \pm 0.021$
$100\theta_{\text{MC}}$	1.04037	$1.04060 \pm 0.00072$	$c_{100}$	1.000577	$1.00058 \pm 0.00040$	$\Omega_\nu h^2$	0.00000	$< 0.00156$
$\tau$	0.0853	$0.0995^{+0.014}_{-0.016}$	$c_{217}$	0.99638	$0.9966 \pm 0.0014$	Age/Gyr	12.969	$13.16 \pm 0.24$
$\Sigma m_\nu$	0.000	$< 0.145$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.611$	$z_*$	1091.49	$1091.08 \pm 0.67$
$N_{\text{eff}}$	3.922	$3.75^{+0.27}_{-0.30}$	$A^{\text{kSZ}}$	10.00	$> 3.92$	$r_*$	137.61	$139.1 \pm 2.4$
$n_s$	0.9864	$0.988 \pm 0.011$	$\beta_1^1$	0.52	$0.68 \pm 0.57$	$100\theta_*$	1.03990	$1.04030 \pm 0.00082$
$\ln(10^{10} A_s)$	3.1028	$3.128^{+0.030}_{-0.033}$	$\Omega_\Lambda$	0.7211	$0.709^{+0.019}_{-0.015}$	$z_{\text{drag}}$	1061.95	$1061.65 \pm 0.98$
$A_{100}^{\text{PS}}$	175	$194 \pm 60$	$\Omega_m$	0.2789	$0.291^{+0.015}_{-0.019}$	$r_{\text{drag}}$	140.11	$141.6 \pm 2.4$
$A_{143}^{\text{PS}}$	19.6	$58 \pm 10$	$\sigma_8$	0.8625	$0.844^{+0.031}_{-0.022}$	$k_D$	0.14534	$0.1444 \pm 0.0019$
$A_{217}^{\text{PS}}$	83.4	$104^{+20}_{-20}$	$z_{\text{re}}$	10.91	$12.1 \pm 1.2$	$100\theta_D$	0.16334	$0.16283 \pm 0.00070$
$A_{143}^{\text{CIB}}$	17.6	—	$H_0$	74.14	$72.3 \pm 2.0$	$z_{\text{eq}}$	3278	$3285 \pm 56$
$A_{217}^{\text{CIB}}$	40.2	$33^{+7}_{-10}$	$10^9 A_s$	2.226	$2.284^{+0.066}_{-0.078}$	$100\theta_{\text{eq}}$	0.8370	$0.836 \pm 0.011$
$A^{\text{tSZ}}_{143}$	10.0	—	$\Omega_m h^2$	0.1533	$0.1517^{+0.0049}_{-0.0059}$	$r_{\text{drag}}/D_V(0.57)$	0.07342	$0.0728 \pm 0.0010$
$r_{143 \times 217}^{\text{PS}}$	0.897	$> 0.838$	$\Omega_m h^3$	0.1137	$0.1097^{+0.0053}_{-0.0061}$			

Best-fit  $\chi^2_{\text{eff}} = 9806.19$ ; R-1 = 0.01374

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.16 lowl: -9.05 CamSpec: 7800.18 Hubble - HST: 0.01

## 11.5 base\_nnu\_mnu\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022170	$0.02220 \pm 0.00042$	$\beta_1^1$	0.59	$0.47 \pm 0.56$	$z_{\text{re}}$	11.36	$11.6 \pm 1.2$
$\Omega_c h^2$	0.12325	$0.1233 \pm 0.0048$	$A_{148}^{\text{PS, ACT}}$	10.21	$10.47 \pm 0.59$	$H_0$	68.60	$67.8_{-3.2}^{+4.1}$
$100\theta_{\text{MC}}$	1.04090	$1.04091 \pm 0.00073$	$A_{218}^{\text{PS, ACT}}$	75.65	$76.6 \pm 4.5$	$10^9 A_s$	2.224	$2.232_{-0.081}^{+0.068}$
$\tau$	0.0919	$0.094_{-0.016}^{+0.014}$	$A_{95}^{\text{PS, SPT}}$	7.12	$7.51_{-1.6}^{+1.3}$	$\Omega_m h^2$	0.1456	$0.1475 \pm 0.0053$
$\Sigma m_\nu$	0.014	$< 0.216$	$A_{150}^{\text{PS, SPT}}$	9.67	$9.96 \pm 0.51$	$\Omega_m h^3$	0.0999	$0.1000 \pm 0.0071$
$N_{\text{eff}}$	3.229	$3.29 \pm 0.33$	$A_{220}^{\text{PS, SPT}}$	72.68	$74.1 \pm 4.4$	$Y_{\text{P}}$	0.25018	$0.2508 \pm 0.0045$
$n_s$	0.9635	$0.966 \pm 0.016$	$r_{95 \times 150}^{\text{PS}}$	0.812	$0.833 \pm 0.090$	$10^9 A_s e^{-2\tau}$	1.8510	$1.848_{-0.022}^{+0.025}$
$\ln(10^{10} A_s)$	3.1021	$3.105_{-0.035}^{+0.032}$	$r_{95 \times 220}^{\text{PS}}$	0.569	$0.59_{-0.14}^{+0.11}$	$\Omega_\nu h^2$	0.00016	$< 0.00232$
$A_{100}^{\text{PS}}$	215	$221 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9094	$0.938 \pm 0.023$	Age/Gyr	13.620	$13.65_{-0.41}^{+0.35}$
$A_{143}^{\text{PS}}$	74.7	$76 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.460	$0.44 \pm 0.19$	$z_*$	1090.74	$1090.78 \pm 0.63$
$A_{217}^{\text{PS}}$	64.0	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.850	$0.85 \pm 0.20$	$r_*$	142.86	$142.6 \pm 2.8$
$A_{143}^{\text{CIB}}$	3.45	$3.23 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9902	$0.9905 \pm 0.0074$	$100\theta_*$	1.04091	$1.04097 \pm 0.00086$
$A_{217}^{\text{CIB}}$	52.4	$49.1 \pm 4.9$	$y_{217}^{\text{ACTs}}$	0.9991	$1.003 \pm 0.013$	$z_{\text{drag}}$	1059.93	$1060.1 \pm 1.4$
$A_{143}^{\text{tSZ}}$	5.07	$2.41_{-1.8}^{+1.0}$	$y_{148}^{\text{ACTe}}$	0.9856	$0.9866 \pm 0.0074$	$r_{\text{drag}}$	145.56	$145.3 \pm 3.0$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.827 \pm 0.068$	$y_{217}^{\text{ACTe}}$	0.9574	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14153	$0.1417 \pm 0.0022$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9831	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16174	$0.16188 \pm 0.00073$
$\gamma^{\text{CIB}}$	0.655	$0.630 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9817	$0.984 \pm 0.010$	$z_{\text{eq}}$	3392	$3369 \pm 78$
$c_{100}$	1.000602	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0143	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8147	$0.819 \pm 0.015$
$c_{217}$	0.99729	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.6907	$0.676_{-0.022}^{+0.043}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07170	$0.0711_{-0.0014}^{+0.0020}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.459$	$\Omega_{\text{m}}$	0.3093	$0.324_{-0.043}^{+0.022}$			
$A^{\text{kSZ}}$	1.15	$5.76_{-1.8}^{+2.8}$	$\sigma_8$	0.8514	$0.812_{-0.025}^{+0.054}$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.59$ ; R-1 = 0.00930

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.34 lowl: -6.53 CamSpec: 7806.50 highL: 694.08

## 11.6 base\_nnu\_mnu\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022340	$0.02210^{+0.00050}_{-0.00045}$	$\beta_1$	0.45	$0.44 \pm 0.56$	$z_{\text{re}}$	11.34	$11.5 \pm 1.2$
$\Omega_c h^2$	0.12120	$0.1220 \pm 0.0047$	$A_{148}^{\text{PS, ACT}}$	10.50	$10.59 \pm 0.58$	$H_0$	69.36	$65.8^{+5.5}_{-3.8}$
$100\theta_{\text{MC}}$	1.04114	$1.04094 \pm 0.00076$	$A_{218}^{\text{PS, ACT}}$	76.62	$76.7 \pm 4.5$	$10^9 A_s$	2.217	$2.222^{+0.065}_{-0.079}$
$\tau$	0.0927	$0.094^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.60	$7.71^{+1.3}_{-1.7}$	$\Omega_m h^2$	0.1442	$0.1475^{+0.0052}_{-0.0064}$
$\Sigma m_\nu$	0.058	$< 0.383$	$A_{150}^{\text{PS, SPT}}$	10.02	$10.11 \pm 0.52$	$\Omega_m h^3$	0.1000	$0.0971 \pm 0.0074$
$N_{\text{eff}}$	3.243	$3.17 \pm 0.34$	$A_{220}^{\text{PS, SPT}}$	73.68	$74.3 \pm 4.5$	$Y_{\text{P}}$	0.25044	$0.2493^{+0.0051}_{-0.0045}$
$n_s$	0.9691	$0.961^{+0.019}_{-0.017}$	$r_{95 \times 150}^{\text{PS}}$	0.792	$0.832 \pm 0.088$	$10^9 A_s e^{-2\tau}$	1.8421	$1.842^{+0.025}_{-0.022}$
$\ln(10^{10} A_s)$	3.0990	$3.101^{+0.030}_{-0.035}$	$r_{95 \times 220}^{\text{PS}}$	0.546	$0.59^{+0.11}_{-0.13}$	$\Omega_\nu h^2$	0.00063	$< 0.00412$
$A_{100}^{\text{PS}}$	213	$220 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9128	$0.935 \pm 0.024$	Age/Gyr	13.591	$13.83^{+0.37}_{-0.49}$
$A_{143}^{\text{PS}}$	75.1	$76 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43^{+0.19}_{-0.21}$	$z_*$	1090.35	$1090.73^{+0.63}_{-0.75}$
$A_{217}^{\text{PS}}$	61.8	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.85 \pm 0.20$	$r_*$	143.17	$143.5 \pm 2.9$
$A_{143}^{\text{CIB}}$	3.06	$3.23 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9907	$0.9911 \pm 0.0074$	$100\theta_*$	1.04115	$1.04112 \pm 0.00087$
$A_{217}^{\text{CIB}}$	51.2	$49.5 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0030	$1.004 \pm 0.013$	$z_{\text{drag}}$	1060.20	$1059.7^{+1.6}_{-1.4}$
$A_{143}^{\text{tSZ}}$	3.91	$2.42^{+1.0}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9870	$0.9873 \pm 0.0074$	$r_{\text{drag}}$	145.83	$146.2 \pm 3.1$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.827^{+0.067}_{-0.076}$	$y_{217}^{\text{ACTe}}$	0.9615	$0.963 \pm 0.010$	$k_{\text{D}}$	0.14132	$0.1411 \pm 0.0022$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9823	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.16166	$0.16161 \pm 0.00074$
$\gamma^{\text{CIB}}$	0.645	$0.635 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9843	$0.986 \pm 0.010$	$z_{\text{eq}}$	3341	$3388^{+78}_{-93}$
$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0175	$1.023^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8245	$0.816 \pm 0.016$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.7004	$0.655^{+0.068}_{-0.028}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07227	$0.0702^{+0.0030}_{-0.0017}$
$\xi^{\text{tSZ-CIB}}$	0.057	$< 0.425$	$\Omega_{\text{m}}$	0.2996	$0.345^{+0.028}_{-0.068}$			
$A^{\text{kSZ}}$	2.50	$5.14^{+2.6}_{-2.0}$	$\sigma_8$	0.836	$0.783^{+0.071}_{-0.035}$			

Best-fit  $\chi_{\text{eff}}^2 = 10517.03$ ; R-1 = 0.02171

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.27 lensing: 10.00 lowl: -7.66 CamSpec: 7808.44 highL: 691.85

## 11.7 base\_nnu\_mnu\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022227	$0.02231 \pm 0.00029$	$\beta_1^1$	0.46	$0.46 \pm 0.56$	$z_{\text{re}}$	11.34	$11.6 \pm 1.2$
$\Omega_c h^2$	0.12214	$0.1228 \pm 0.0046$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.49 \pm 0.59$	$H_0$	69.18	$69.2 \pm 1.7$
$100\theta_{\text{MC}}$	1.04112	$1.04103 \pm 0.00071$	$A_{218}^{\text{PS, ACT}}$	76.64	$76.6 \pm 4.4$	$10^9 A_s$	2.219	$2.237^{+0.064}_{-0.075}$
$\tau$	0.0922	$0.095^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.39	$7.52^{+1.4}_{-1.6}$	$\Omega_m h^2$	0.14444	$0.1463 \pm 0.0048$
$\Sigma m_\nu$	0.006	$< 0.132$	$A_{150}^{\text{PS, SPT}}$	9.91	$9.98 \pm 0.51$	$\Omega_m h^3$	0.0999	$0.1013 \pm 0.0053$
$N_{\text{eff}}$	3.231	$3.32 \pm 0.27$	$A_{220}^{\text{PS, SPT}}$	73.60	$74.1 \pm 4.4$	$Y_{\text{P}}$	0.25023	$0.2514 \pm 0.0035$
$n_s$	0.9661	$0.970 \pm 0.010$	$r_{95 \times 150}^{\text{PS}}$	0.796	$0.833 \pm 0.090$	$10^9 A_s e^{-2\tau}$	1.8452	$1.847 \pm 0.022$
$\ln(10^{10} A_s)$	3.0996	$3.107 \pm 0.030$	$r_{95 \times 220}^{\text{PS}}$	0.560	$0.59^{+0.11}_{-0.14}$	$\Omega_\nu h^2$	0.00007	$< 0.00142$
$A_{100}^{\text{PS}}$	212	$221 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9179	$0.938 \pm 0.023$	Age/Gyr	13.599	$13.56 \pm 0.25$
$A_{143}^{\text{PS}}$	75.1	$76 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.43 \pm 0.19$	$z_*$	1090.57	$1090.62 \pm 0.57$
$A_{217}^{\text{PS}}$	62.5	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	143.08	$142.5 \pm 2.5$
$A_{143}^{\text{CIB}}$	3.04	$3.23 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9905	$0.9907 \pm 0.0075$	$100\theta_*$	1.04111	$1.04101 \pm 0.00083$
$A_{217}^{\text{CIB}}$	50.6	$49.2 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0025	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.97	$1060.3 \pm 1.0$
$A_{143}^{\text{tSZ}}$	3.73	$2.41^{+1.0}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9867	$0.9869 \pm 0.0074$	$r_{\text{drag}}$	145.78	$145.1 \pm 2.6$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.827 \pm 0.068$	$y_{217}^{\text{ACTe}}$	0.9610	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14134	$0.1418 \pm 0.0019$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9811	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.16173	$0.16192 \pm 0.00065$
$\gamma^{\text{CIB}}$	0.639	$0.631 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9833	$0.985 \pm 0.010$	$z_{\text{eq}}$	3366.3	$3345 \pm 46$
$c_{100}$	1.000585	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0166	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8196	$0.8240^{+0.0085}_{-0.0094}$
$c_{217}$	0.99740	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.6982	$0.694^{+0.013}_{-0.011}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07214	$0.07192 \pm 0.00066$
$\xi^{\text{tSZ-CIB}}$	0.094	$< 0.455$	$\Omega_{\text{m}}$	0.3018	$0.306^{+0.011}_{-0.013}$			
$A^{\text{kSZ}}$	3.49	$5.71^{+2.7}_{-1.8}$	$\sigma_8$	0.8486	$0.830^{+0.029}_{-0.022}$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.15$ ; R-1 = 0.01135

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.55 DR9: 0.66 6DF: 0.19 CMB - lowLike: 2014.26 lowl: -7.12 CamSpec: 7807.48 highL: 692.96

## 11.8 base\_nnu\_mnu\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022550	$0.02260 \pm 0.00030$	$\beta_1^1$	0.46	$0.51 \pm 0.56$	$z_{\text{re}}$	11.24	$12.1 \pm 1.2$
$\Omega_c h^2$	0.12526	$0.1256 \pm 0.0044$	$A_{148}^{\text{PS, ACT}}$	10.69	$10.46 \pm 0.59$	$H_0$	72.25	$71.8 \pm 1.9$
$100\theta_{\text{MC}}$	1.04087	$1.04082 \pm 0.00070$	$A_{218}^{\text{PS, ACT}}$	77.64	$76.5 \pm 4.4$	$10^9 A_s$	2.229	$2.279^{+0.066}_{-0.075}$
$\tau$	0.0908	$0.101 \pm 0.014$	$A_{95}^{\text{PS, SPT}}$	7.18	$7.43^{+1.3}_{-1.6}$	$\Omega_m h^2$	0.14781	$0.1493 \pm 0.0047$
$\Sigma m_\nu$	0.000	$< 0.111$	$A_{150}^{\text{PS, SPT}}$	10.13	$9.92 \pm 0.50$	$\Omega_m h^3$	0.1068	$0.1072^{+0.0048}_{-0.0054}$
$N_{\text{eff}}$	3.574	$3.61 \pm 0.25$	$A_{220}^{\text{PS, SPT}}$	75.08	$73.9 \pm 4.4$	$Y_{\text{P}}$	0.25475	$0.2552 \pm 0.0031$
$n_s$	0.9808	$0.983 \pm 0.010$	$r_{95 \times 150}^{\text{PS}}$	0.832	$0.835 \pm 0.089$	$10^9 A_s e^{-2\tau}$	1.8592	$1.861 \pm 0.020$
$\ln(10^{10} A_s)$	3.1042	$3.126 \pm 0.030$	$r_{95 \times 220}^{\text{PS}}$	0.623	$0.59^{+0.12}_{-0.14}$	$\Omega_\nu h^2$	0.00000	$< 0.00119$
$A_{100}^{\text{PS}}$	227	$226 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9293	$0.938 \pm 0.024$	Age/Gyr	13.253	$13.26 \pm 0.22$
$A_{143}^{\text{PS}}$	79.8	$78.7 \pm 8.6$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1090.76	$1090.76 \pm 0.60$
$A_{217}^{\text{PS}}$	66.2	$64 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.842	$0.85 \pm 0.20$	$r_*$	140.46	$140.2 \pm 2.2$
$A_{143}^{\text{CIB}}$	3.03	$3.23 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9891	$0.9895 \pm 0.0074$	$100\theta_*$	1.04062	$1.04059 \pm 0.00079$
$A_{217}^{\text{CIB}}$	47.4	$49.0 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0019	$1.002 \pm 0.013$	$z_{\text{drag}}$	1061.23	$1061.38 \pm 0.95$
$A_{143}^{\text{tSZ}}$	2.37	$2.35^{+0.97}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9852	$0.9855 \pm 0.0074$	$r_{\text{drag}}$	143.01	$142.7 \pm 2.2$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.831 \pm 0.066$	$y_{217}^{\text{ACTe}}$	0.9609	$0.961 \pm 0.010$	$k_{\text{D}}$	0.14331	$0.1436 \pm 0.0017$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{95}^{\text{SPT}}$	0.9762	$0.978 \pm 0.020$	$100\theta_{\text{D}}$	0.16241	$0.16244 \pm 0.00060$
$\gamma^{\text{CIB}}$	0.596	$0.626 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9816	$0.982 \pm 0.010$	$z_{\text{eq}}$	3298	$3294 \pm 56$
$c_{100}$	1.000592	$1.00060 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0178	$1.020 \pm 0.023$	$100\theta_{\text{eq}}$	0.8332	$0.834 \pm 0.011$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.7169	$0.710^{+0.017}_{-0.014}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07320	$0.07282 \pm 0.00096$
$\xi^{\text{tSZ-CIB}}$	0.388	$< 0.477$	$\Omega_{\text{m}}$	0.2831	$0.290^{+0.014}_{-0.017}$			
$A^{\text{kSZ}}$	6.35	$5.91^{+2.7}_{-1.7}$	$\sigma_8$	0.8543	$0.845^{+0.027}_{-0.020}$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.14$ ; R-1 = 0.01465

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.05 lowl: -8.72 CamSpec: 7808.66 highL: 694.38 Hubble - HST: 0.43

## 12 nnu+yhe

### 12.1 base\_nnu\_yhe\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022154	$0.02239 \pm 0.00041$	$r_{143 \times 217}^{\text{CIB}}$	0.578	$0.50^{+0.26}_{-0.21}$	$Y_P$	0.2562	$0.281^{+0.041}_{-0.034}$
$\Omega_c h^2$	0.1195	$0.1195^{+0.0081}_{-0.011}$	$\gamma^{\text{CIB}}$	0.541	$0.54^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8421	$1.848 \pm 0.030$
$100\theta_{\text{MC}}$	1.04159	$1.0427 \pm 0.0025$	$c_{100}$	1.000591	$1.00058 \pm 0.00040$	Age/Gyr	13.82	$13.75 \pm 0.60$
$\tau$	0.0914	$0.095^{+0.014}_{-0.016}$	$c_{217}$	0.99647	$0.9965 \pm 0.0014$	$z_*$	1090.59	$1091.41 \pm 0.93$
$N_{\text{eff}}$	3.02	$3.08^{+0.57}_{-0.78}$	$\xi^{\text{tSZ-CIB}}$	0.167	$< 0.603$	$r_*$	144.8	$144.6 \pm 5.6$
$Y_{\text{He}}$	0.2562	$0.281^{+0.041}_{-0.034}$	$A^{\text{kSZ}}$	0.6	—	$100\theta_*$	1.04153	$1.0418 \pm 0.0018$
$n_s$	0.9662	$0.975 \pm 0.016$	$\beta_1^1$	0.67	$0.63 \pm 0.57$	$z_{\text{drag}}$	1059.74	$1061.2 \pm 1.5$
$\ln(10^{10} A_s)$	3.0963	$3.106 \pm 0.035$	$\Omega_\Lambda$	0.6858	$0.694 \pm 0.024$	$r_{\text{drag}}$	147.6	$147.3 \pm 5.8$
$A_{100}^{\text{PS}}$	152	$187 \pm 60$	$\Omega_m$	0.3142	$0.306 \pm 0.024$	$k_D$	0.1398	$0.1394^{+0.0048}_{-0.0060}$
$A_{143}^{\text{PS}}$	67.8	$59 \pm 10$	$\sigma_8$	0.8329	$0.838 \pm 0.024$	$100\theta_D$	0.16158	$0.16270 \pm 0.00096$
$A_{217}^{\text{PS}}$	123.0	$105^{+20}_{-20}$	$z_{\text{re}}$	11.27	$11.6 \pm 1.3$	$z_{\text{eq}}$	3396	$3382 \pm 100$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	67.29	$68.4^{+3.8}_{-4.8}$	$100\theta_{\text{eq}}$	0.8143	$0.819 \pm 0.018$
$A_{217}^{\text{CIB}}$	24.6	$32^{+7}_{-10}$	$10^9 A_s$	2.212	$2.234^{+0.073}_{-0.086}$	$r_{\text{drag}}/D_V(0.57)$	0.07148	$0.0720^{+0.0012}_{-0.0014}$
$A_{143}^{\text{tSZ}}$	5.72	—	$\Omega_m h^2$	0.1423	$0.1425^{+0.0082}_{-0.011}$			
$r_{143 \times 217}^{\text{PS}}$	0.903	$> 0.842$	$\Omega_m h^3$	0.0957	$0.0979^{+0.0099}_{-0.014}$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.15$ ; R-1 = 0.01358

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.37 lowl: -7.53 CamSpec: 7797.68



## 12.2 base\_nnu\_yhe\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022220	$0.02242 \pm 0.00039$	$r_{143 \times 217}^{\text{CIB}}$	0.473	$0.50^{+0.26}_{-0.21}$	$Y_P$	0.2820	$0.287^{+0.039}_{-0.033}$
$\Omega_c h^2$	0.1143	$0.1156^{+0.0073}_{-0.010}$	$\gamma^{\text{CIB}}$	0.529	$0.54 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8281	$1.834 \pm 0.029$
$100\theta_{\text{MC}}$	1.04322	$1.0433 \pm 0.0024$	$c_{100}$	1.000592	$1.00058 \pm 0.00040$	Age/Gyr	14.09	$13.92 \pm 0.58$
$\tau$	0.0802	$0.094^{+0.013}_{-0.016}$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	$z_*$	1090.98	$1091.16 \pm 0.91$
$N_{\text{eff}}$	2.70	$2.88^{+0.52}_{-0.73}$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.609$	$r_*$	147.7	$146.5^{+6.0}_{-5.3}$
$Y_{\text{He}}$	0.2820	$0.287^{+0.039}_{-0.033}$	$A^{\text{kSZ}}$	3.29	—	$100\theta_*$	1.04255	$1.0424 \pm 0.0018$
$n_s$	0.9640	$0.973 \pm 0.016$	$\beta_1^1$	0.63	$0.58 \pm 0.57$	$z_{\text{drag}}$	1060.31	$1061.1 \pm 1.5$
$\ln(10^{10} A_s)$	3.0662	$3.096 \pm 0.034$	$\Omega_\Lambda$	0.6851	$0.696 \pm 0.021$	$r_{\text{drag}}$	150.5	$149.2^{+6.1}_{-5.5}$
$A_{100}^{\text{PS}}$	151	$182 \pm 60$	$\Omega_m$	0.3149	$0.304 \pm 0.021$	$k_D$	0.1369	$0.1378^{+0.0044}_{-0.0058}$
$A_{143}^{\text{PS}}$	48.2	$57 \pm 10$	$\sigma_8$	0.8134	$0.826^{+0.021}_{-0.024}$	$100\theta_D$	0.16199	$0.16245 \pm 0.00095$
$A_{217}^{\text{PS}}$	109.6	$104^{+20}_{-20}$	$z_{\text{re}}$	10.28	$11.5 \pm 1.2$	$z_{\text{eq}}$	3419	$3382 \pm 94$
$A_{143}^{\text{CIB}}$	6.29	—	$H_0$	65.99	$67.7^{+3.6}_{-4.5}$	$100\theta_{\text{eq}}$	0.8114	$0.819^{+0.016}_{-0.018}$
$A_{217}^{\text{CIB}}$	29.8	$32^{+7}_{-10}$	$10^9 A_s$	2.146	$2.212^{+0.071}_{-0.082}$	$r_{\text{drag}}/D_V(0.57)$	0.07150	$0.0722^{+0.0011}_{-0.0012}$
$A_{143}^{\text{tSZ}}$	8.05	—	$\Omega_m h^2$	0.1372	$0.1387^{+0.0074}_{-0.010}$			
$r_{143 \times 217}^{\text{PS}}$	0.880	$> 0.841$	$\Omega_m h^3$	0.0905	$0.0942^{+0.0089}_{-0.013}$			

Best-fit  $\chi_{\text{eff}}^2 = 9814.61$ ; R-1 = 0.01561

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.63 lensing: 9.38 lowl: -7.94 CamSpec: 7797.81

### 12.3 base\_nnu\_yhe\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022399	$0.02240 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.663	$0.50^{+0.26}_{-0.21}$	$Y_P$	0.2737	$0.284^{+0.036}_{-0.032}$
$\Omega_c h^2$	0.1258	$0.1185^{+0.0068}_{-0.0087}$	$\gamma^{\text{CIB}}$	0.514	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8675	$1.846 \pm 0.026$
$100\theta_{\text{MC}}$	1.04142	$1.0428 \pm 0.0021$	$c_{100}$	1.000579	$1.00059 \pm 0.00040$	Age/Gyr	13.386	$13.78 \pm 0.41$
$\tau$	0.0867	$0.095^{+0.013}_{-0.015}$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	$z_*$	1091.77	$1091.41 \pm 0.89$
$N_{\text{eff}}$	3.463	$3.02^{+0.42}_{-0.54}$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.608$	$r_*$	140.88	$145.0 \pm 4.2$
$Y_{\text{He}}$	0.2737	$0.284^{+0.036}_{-0.032}$	$A^{\text{kSZ}}$	10.0	—	$100\theta_*$	1.04071	$1.0420 \pm 0.0015$
$n_s$	0.9771	$0.975 \pm 0.011$	$\beta_1^1$	0.60	$0.63 \pm 0.57$	$z_{\text{drag}}$	1061.54	$1061.2 \pm 1.4$
$\ln(10^{10} A_s)$	3.1006	$3.105 \pm 0.030$	$\Omega_\Lambda$	0.6994	$0.695 \pm 0.011$	$r_{\text{drag}}$	143.50	$147.6 \pm 4.3$
$A_{100}^{\text{PS}}$	160	$187 \pm 60$	$\Omega_m$	0.3006	$0.305 \pm 0.011$	$k_D$	0.14221	$0.1389^{+0.0037}_{-0.0045}$
$A_{143}^{\text{PS}}$	27.3	$59 \pm 10$	$\sigma_8$	0.8449	$0.836 \pm 0.021$	$100\theta_D$	0.16320	$0.16271 \pm 0.00095$
$A_{217}^{\text{PS}}$	90.0	$105^{+20}_{-20}$	$z_{\text{re}}$	11.07	$11.6 \pm 1.2$	$z_{\text{eq}}$	3353	$3381 \pm 54$
$A_{143}^{\text{CIB}}$	13.4	—	$H_0$	70.35	$68.2^{+2.3}_{-2.7}$	$100\theta_{\text{eq}}$	0.8230	$0.8188 \pm 0.0093$
$A_{217}^{\text{CIB}}$	37.0	$32^{+7}_{-10}$	$10^9 A_s$	2.221	$2.233^{+0.064}_{-0.073}$	$r_{\text{drag}}/D_V(0.57)$	0.07217	$0.07205 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	10.0	—	$\Omega_m h^2$	0.1488	$0.1415^{+0.0068}_{-0.0087}$			
$r_{143 \times 217}^{\text{PS}}$	0.877	$> 0.842$	$\Omega_m h^3$	0.1047	$0.0967^{+0.0072}_{-0.0097}$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.51$ ; R-1 = 0.00639

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.71 DR7: 0.49 6DF: 0.50 CMB - lowLike: 2014.24 lowl: -8.58 CamSpec: 7798.28

## 12.4 base\_nnu\_yhe\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022694	$0.02262 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.714	$0.51^{+0.27}_{-0.20}$	$Y_P$	0.2878	$0.259 \pm 0.033$
$\Omega_c h^2$	0.1239	$0.1272^{+0.0070}_{-0.0079}$	$\gamma^{\text{CIB}}$	0.516	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8648	$1.870 \pm 0.022$
$100\theta_{\text{MC}}$	1.04214	$1.0408 \pm 0.0019$	$c_{100}$	1.000579	$1.00059 \pm 0.00040$	Age/Gyr	13.274	$13.17 \pm 0.31$
$\tau$	0.0845	$0.099^{+0.014}_{-0.016}$	$c_{217}$	0.99644	$0.9966 \pm 0.0014$	$z_*$	1091.87	$1091.07 \pm 0.87$
$N_{\text{eff}}$	3.521	$3.70 \pm 0.42$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.596$	$r_*$	140.79	$139.5 \pm 3.4$
$Y_{\text{He}}$	0.2878	$0.259 \pm 0.033$	$A^{\text{kSZ}}$	10.0	—	$100\theta_*$	1.04100	$1.0404 \pm 0.0012$
$n_s$	0.9883	$0.988 \pm 0.012$	$\beta_1^1$	0.51	$0.66 \pm 0.57$	$z_{\text{drag}}$	1062.60	$1061.7 \pm 1.4$
$\ln(10^{10} A_s)$	3.0948	$3.127^{+0.029}_{-0.032}$	$\Omega_\Lambda$	0.7172	$0.714 \pm 0.014$	$r_{\text{drag}}$	143.32	$142.0 \pm 3.4$
$A_{100}^{\text{PS}}$	183	$192 \pm 60$	$\Omega_m$	0.2828	$0.286 \pm 0.014$	$k_D$	0.14184	$0.1440 \pm 0.0035$
$A_{143}^{\text{PS}}$	18.5	$59 \pm 10$	$\sigma_8$	0.8377	$0.855 \pm 0.019$	$100\theta_D$	0.16377	$0.16281 \pm 0.00095$
$A_{217}^{\text{PS}}$	80.6	$104^{+20}_{-20}$	$z_{\text{re}}$	10.84	$12.0 \pm 1.3$	$z_{\text{eq}}$	3294	$3290 \pm 57$
$A_{143}^{\text{CIB}}$	19.9	—	$H_0$	72.17	$72.6 \pm 2.2$	$100\theta_{\text{eq}}$	0.8355	$0.835 \pm 0.011$
$A_{217}^{\text{CIB}}$	42.7	$33^{+8}_{-10}$	$10^9 A_s$	2.208	$2.281^{+0.064}_{-0.076}$	$r_{\text{drag}}/D_V(0.57)$	0.07326	$0.07305 \pm 0.00090$
$A_{143}^{\text{tSZ}}$	10.0	—	$\Omega_m h^2$	0.1473	$0.1504^{+0.0069}_{-0.0078}$			
$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.836$	$\Omega_m h^3$	0.1063	$0.1093^{+0.0074}_{-0.0083}$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.06$ ; R-1 = 0.01498

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.30 lowl: -9.20 CamSpec: 7799.62 Hubble - HST: 0.48

## 12.5 base\_nnu\_yhe\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022365	$0.02233 \pm 0.00040$	$A^{\text{KSZ}}$	5.80	$5.70^{+2.8}_{-1.8}$	$\Omega_m$	0.2978	$0.304 \pm 0.023$
$\Omega_c h^2$	0.1260	$0.1233^{+0.0084}_{-0.012}$	$\beta_1^1$	0.46	$0.46 \pm 0.56$	$\sigma_8$	0.8425	$0.840^{+0.023}_{-0.027}$
$100\theta_{\text{MC}}$	1.04052	$1.0412^{+0.0026}_{-0.0024}$	$A_{148}^{\text{PS, ACT}}$	10.66	$10.49 \pm 0.59$	$z_{\text{re}}$	11.18	$11.6 \pm 1.2$
$\tau$	0.0896	$0.095^{+0.013}_{-0.016}$	$A_{218}^{\text{PS, ACT}}$	77.39	$76.6 \pm 4.5$	$H_0$	70.74	$69.5^{+3.9}_{-5.0}$
$N_{\text{eff}}$	3.53	$3.33^{+0.59}_{-0.83}$	$A_{95}^{\text{PS, SPT}}$	7.26	$7.52^{+1.3}_{-1.6}$	$10^9 A_s$	2.225	$2.236^{+0.071}_{-0.086}$
$Y_{\text{He}}$	0.2487	$0.254^{+0.041}_{-0.033}$	$A_{150}^{\text{PS, SPT}}$	10.10	$9.97 \pm 0.52$	$\Omega_m h^2$	0.1490	$0.1463^{+0.0085}_{-0.012}$
$n_s$	0.9745	$0.970 \pm 0.016$	$A_{220}^{\text{PS, SPT}}$	74.71	$74.1 \pm 4.5$	$\Omega_m h^3$	0.1054	$0.102^{+0.010}_{-0.016}$
$\ln(10^{10} A_s)$	3.1021	$3.106^{+0.033}_{-0.038}$	$r_{95 \times 150}^{\text{PS}}$	0.824	$0.834^{+0.11}_{-0.091}$	$Y_{\text{P}}$	0.2487	$0.254^{+0.041}_{-0.033}$
$A_{100}^{\text{PS}}$	221	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.613	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8596	$1.848 \pm 0.030$
$A_{143}^{\text{PS}}$	78.8	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9277	$0.938 \pm 0.023$	Age/Gyr	13.35	$13.56^{+0.66}_{-0.60}$
$A_{217}^{\text{PS}}$	65.3	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.80	$1090.74 \pm 0.80$
$A_{143}^{\text{CIB}}$	3.04	$3.23 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.85 \pm 0.20$	$r_*$	140.6	$142.6^{+6.2}_{-5.5}$
$A_{217}^{\text{CIB}}$	48.1	$49.2 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9894	$0.9905 \pm 0.0075$	$100\theta_*$	1.04049	$1.0411 \pm 0.0018$
$A_{143}^{\text{tSZ}}$	2.62	$2.40^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0018	$1.004 \pm 0.014$	$z_{\text{drag}}$	1060.62	$1060.5 \pm 1.4$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.827 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9855	$0.9866 \pm 0.0075$	$r_{\text{drag}}$	143.2	$145.2^{+6.4}_{-5.7}$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{217}^{\text{ACTe}}$	0.9606	$0.962 \pm 0.011$	$k_{\text{D}}$	0.1433	$0.1418^{+0.0048}_{-0.0063}$
$\gamma^{\text{CIB}}$	0.604	$0.630 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9770	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16221	$0.16201 \pm 0.00080$
$c_{100}$	1.000579	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9820	$0.984 \pm 0.010$	$z_{\text{eq}}$	3327	$3358 \pm 100$
$c_{217}$	0.99747	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0179	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8270	$0.822^{+0.018}_{-0.020}$
$\xi^{\text{tSZ-CIB}}$	0.325	$< 0.460$	$\Omega_{\Lambda}$	0.7022	$0.696 \pm 0.023$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07233	$0.0721^{+0.0012}_{-0.0014}$

Best-fit  $\chi_{\text{eff}}^2 = 10508.76$ ; R-1 = 0.01539

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.17 lowl: -8.26 CamSpec: 7808.57 highL: 693.98

## 12.6 base\_nnu\_yhe\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022256	$0.02238 \pm 0.00038$	$A^{\text{KSZ}}$	2.72	$5.10^{+2.7}_{-1.9}$	$\Omega_m$	0.3096	$0.303 \pm 0.021$
$\Omega_c h^2$	0.1179	$0.1186^{+0.0077}_{-0.010}$	$\beta_1^1$	0.45	$0.41 \pm 0.55$	$\sigma_8$	0.8223	$0.829^{+0.020}_{-0.024}$
$100\theta_{\text{MC}}$	1.04209	$1.0421 \pm 0.0023$	$A_{148}^{\text{PS, ACT}}$	10.48	$10.62 \pm 0.58$	$z_{\text{re}}$	10.71	$11.4 \pm 1.2$
$\tau$	0.0853	$0.094^{+0.013}_{-0.015}$	$A_{218}^{\text{PS, ACT}}$	76.52	$76.6 \pm 4.5$	$H_0$	67.43	$68.5^{+3.7}_{-4.4}$
$N_{\text{eff}}$	2.96	$3.07^{+0.54}_{-0.72}$	$A_{95}^{\text{PS, SPT}}$	7.60	$7.72^{+1.4}_{-1.6}$	$10^9 A_s$	2.175	$2.213^{+0.067}_{-0.080}$
$Y_{\text{He}}$	0.2642	$0.264^{+0.038}_{-0.032}$	$A_{150}^{\text{PS, SPT}}$	9.97	$10.13 \pm 0.52$	$\Omega_m h^2$	0.1408	$0.1416^{+0.0078}_{-0.010}$
$n_s$	0.9640	$0.969 \pm 0.015$	$A_{220}^{\text{PS, SPT}}$	73.63	$74.2 \pm 4.5$	$\Omega_m h^3$	0.0949	$0.0973^{+0.0094}_{-0.013}$
$\ln(10^{10} A_s)$	3.0797	$3.096^{+0.031}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.790	$0.833 \pm 0.089$	$Y_{\text{P}}$	0.2642	$0.264^{+0.038}_{-0.032}$
$A_{100}^{\text{PS}}$	212	$218 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.545	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8341	$1.835 \pm 0.029$
$A_{143}^{\text{PS}}$	76.1	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9133	$0.935 \pm 0.023$	Age/Gyr	13.85	$13.76 \pm 0.57$
$A_{217}^{\text{PS}}$	62.7	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1090.62	$1090.60 \pm 0.77$
$A_{143}^{\text{CIB}}$	3.04	$3.21 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	145.4	$144.9 \pm 5.4$
$A_{217}^{\text{CIB}}$	51.0	$49.6^{+4.8}_{-5.5}$	$y_{148}^{\text{ACTs}}$	0.9902	$0.9909 \pm 0.0075$	$100\theta_*$	1.04183	$1.0418 \pm 0.0017$
$A_{143}^{\text{tSZ}}$	3.83	$2.38^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.004 \pm 0.013$	$z_{\text{drag}}$	1060.12	$1060.5^{+1.3}_{-1.5}$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.829^{+0.066}_{-0.076}$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9871 \pm 0.0076$	$r_{\text{drag}}$	148.2	$147.6 \pm 5.5$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9608	$0.963 \pm 0.011$	$k_{\text{D}}$	0.1392	$0.1398^{+0.0044}_{-0.0056}$
$\gamma^{\text{CIB}}$	0.643	$0.636 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9811	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.16171	$0.16187 \pm 0.00080$
$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9832	$0.985 \pm 0.011$	$z_{\text{eq}}$	3386	$3363 \pm 91$
$c_{217}$	0.99735	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0168	$1.023 \pm 0.024$	$100\theta_{\text{eq}}$	0.8167	$0.822 \pm 0.017$
$\xi^{\text{tSZ-CIB}}$	0.063	$< 0.440$	$\Omega_{\Lambda}$	0.6904	$0.697 \pm 0.021$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07175	$0.0722^{+0.0010}_{-0.0012}$

Best-fit  $\chi_{\text{eff}}^2 = 10516.73$ ; R-1 = 0.02971

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.27 lensing: 9.56 lowl: -7.50 CamSpec: 7807.76 highL: 692.49

## 12.7 base\_nnu\_yhe\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022273	$0.02233 \pm 0.00031$	$A^{\text{KSZ}}$	1.95	$5.72^{+2.8}_{-1.8}$	$\Omega_m$	0.3039	$0.305 \pm 0.011$
$\Omega_c h^2$	0.1232	$0.1211^{+0.0070}_{-0.0087}$	$\beta_1^1$	0.49	$0.44 \pm 0.55$	$\sigma_8$	0.8378	$0.836^{+0.020}_{-0.022}$
$100\theta_{\text{MC}}$	1.04085	$1.0417 \pm 0.0020$	$A_{148}^{\text{PS, ACT}}$	10.25	$10.48 \pm 0.59$	$z_{\text{re}}$	11.33	$11.5 \pm 1.2$
$\tau$	0.0919	$0.095^{+0.013}_{-0.015}$	$A_{218}^{\text{PS, ACT}}$	75.51	$76.6 \pm 4.5$	$H_0$	69.33	$68.8^{+2.3}_{-2.7}$
$N_{\text{eff}}$	3.322	$3.19^{+0.43}_{-0.54}$	$A_{95}^{\text{PS, SPT}}$	7.18	$7.51^{+1.3}_{-1.6}$	$10^9 A_s$	2.222	$2.228^{+0.063}_{-0.073}$
$Y_{\text{He}}$	0.2485	$0.260^{+0.034}_{-0.029}$	$A_{150}^{\text{PS, SPT}}$	9.70	$9.97 \pm 0.52$	$\Omega_m h^2$	0.1461	$0.1441^{+0.0070}_{-0.0087}$
$n_s$	0.9688	$0.969 \pm 0.010$	$A_{220}^{\text{PS, SPT}}$	72.44	$74.0 \pm 4.5$	$\Omega_m h^3$	0.1013	$0.0993^{+0.0075}_{-0.0098}$
$\ln(10^{10} A_s)$	3.1009	$3.103 \pm 0.030$	$r_{95 \times 150}^{\text{PS}}$	0.805	$0.834^{+0.11}_{-0.091}$	$Y_{\text{P}}$	0.2485	$0.260^{+0.034}_{-0.029}$
$A_{100}^{\text{PS}}$	210	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.558	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8488	$1.844 \pm 0.025$
$A_{143}^{\text{PS}}$	75.3	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9112	$0.938 \pm 0.023$	Age/Gyr	13.542	$13.66 \pm 0.40$
$A_{217}^{\text{PS}}$	62.4	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.44 \pm 0.19$	$z_*$	1090.57	$1090.76 \pm 0.73$
$A_{143}^{\text{CIB}}$	3.26	$3.23 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.85 \pm 0.20$	$r_*$	142.35	$143.6 \pm 4.2$
$A_{217}^{\text{CIB}}$	52.5	$49.2^{+4.8}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9901	$0.9904 \pm 0.0075$	$100\theta_*$	1.04090	$1.0414 \pm 0.0014$
$A_{143}^{\text{tSZ}}$	4.60	$2.41^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0007	$1.003 \pm 0.014$	$z_{\text{drag}}$	1060.12	$1060.5 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.829	$0.828 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9860	$0.9866 \pm 0.0075$	$r_{\text{drag}}$	145.02	$146.3 \pm 4.2$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{217}^{\text{ACTe}}$	0.9594	$0.962 \pm 0.011$	$k_{\text{D}}$	0.14197	$0.1407^{+0.0037}_{-0.0044}$
$\gamma^{\text{CIB}}$	0.659	$0.630 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9819	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16181	$0.16200 \pm 0.00078$
$c_{100}$	1.000586	$1.00059 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9816	$0.984 \pm 0.010$	$z_{\text{eq}}$	3352	$3365 \pm 53$
$c_{217}$	0.99728	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0155	$1.022^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8223	$0.8207 \pm 0.0092$
$\xi^{\text{tSZ-CIB}}$	0.013	$< 0.463$	$\Omega_{\Lambda}$	0.6961	$0.695 \pm 0.011$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07200	$0.07201 \pm 0.00062$

Best-fit  $\chi_{\text{eff}}^2 = 10510.15$ ; R-1 = 0.01288

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.76 DR9: 0.49 6DF: 0.23 CMB - lowLike: 2014.29 lowl: -7.62 CamSpec: 7807.97 highL: 693.94

## 12.8 base\_nnu\_yhe\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022423	$0.02251 \pm 0.00034$	$A^{\text{KSZ}}$	4.10	$5.74^{+2.8}_{-1.7}$	$\Omega_m$	0.2927	$0.288 \pm 0.014$
$\Omega_c h^2$	0.1257	$0.1293^{+0.0068}_{-0.0081}$	$\beta_1^1$	0.50	$0.50 \pm 0.55$	$\sigma_8$	0.8397	$0.854 \pm 0.019$
$100\theta_{\text{MC}}$	1.04039	$1.0398 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.50 \pm 0.59$	$z_{\text{re}}$	11.13	$11.9 \pm 1.2$
$\tau$	0.0898	$0.098^{+0.014}_{-0.016}$	$A_{218}^{\text{PS, ACT}}$	76.80	$76.6 \pm 4.4$	$H_0$	71.29	$72.7 \pm 2.2$
$N_{\text{eff}}$	3.572	$3.83^{+0.40}_{-0.45}$	$A_{95}^{\text{PS, SPT}}$	7.34	$7.52^{+1.3}_{-1.6}$	$10^9 A_s$	2.221	$2.272^{+0.063}_{-0.076}$
$Y_{\text{He}}$	0.2422	$0.236 \pm 0.030$	$A_{150}^{\text{PS, SPT}}$	9.94	$9.99 \pm 0.52$	$\Omega_m h^2$	0.1488	$0.1525^{+0.0067}_{-0.0080}$
$n_s$	0.9757	$0.980 \pm 0.011$	$A_{220}^{\text{PS, SPT}}$	73.83	$74.2 \pm 4.4$	$\Omega_m h^3$	0.1061	$0.1110^{+0.0072}_{-0.0085}$
$\ln(10^{10} A_s)$	3.1005	$3.123^{+0.028}_{-0.033}$	$r_{95 \times 150}^{\text{PS}}$	0.803	$0.834^{+0.11}_{-0.091}$	$Y_{\text{P}}$	0.2422	$0.236 \pm 0.030$
$A_{100}^{\text{PS}}$	217	$224 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.574	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8558	$1.866 \pm 0.021$
$A_{143}^{\text{PS}}$	76.2	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9207	$0.938 \pm 0.023$	Age/Gyr	13.309	$13.11 \pm 0.31$
$A_{217}^{\text{PS}}$	63.1	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	$z_*$	1090.44	$1090.48 \pm 0.72$
$A_{143}^{\text{CIB}}$	3.05	$3.22 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	140.49	$138.6 \pm 3.3$
$A_{217}^{\text{CIB}}$	50.0	$49.2^{+4.8}_{-5.3}$	$y_{148}^{\text{ACTs}}$	0.9902	$0.9907 \pm 0.0076$	$100\theta_*$	1.04051	$1.0400 \pm 0.0012$
$A_{143}^{\text{tSZ}}$	3.46	$2.37^{+0.98}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.004 \pm 0.014$	$z_{\text{drag}}$	1060.54	$1060.9 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.828 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9863	$0.9869 \pm 0.0074$	$r_{\text{drag}}$	143.08	$141.1 \pm 3.4$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9610	$0.962 \pm 0.011$	$k_{\text{D}}$	0.14367	$0.1455^{+0.0033}_{-0.0037}$
$\gamma^{\text{CIB}}$	0.631	$0.630 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9800	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16194	$0.16211 \pm 0.00077$
$c_{100}$	1.000588	$1.00060 \pm 0.00039$	$y_{150}^{\text{SPT}}$	0.9828	$0.985 \pm 0.010$	$z_{\text{eq}}$	3306	$3286 \pm 57$
$c_{217}$	0.99743	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0169	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8311	$0.835 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.144	$< 0.473$	$\Omega_{\Lambda}$	0.7073	$0.712 \pm 0.014$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07262	$0.07288 \pm 0.00089$

Best-fit  $\chi_{\text{eff}}^2 = 10510.16$ ; R-1 = 0.01894

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.13 lowl: -8.40 CamSpec: 7809.56 highL: 693.57 Hubble - HST: 1.10

## 13 nrun

### 13.1 base\_nrun\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022159	$0.02218 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.132	$0.47^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.09623	$0.09624 \pm 0.00063$
$\Omega_c h^2$	0.12064	$0.1206 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.541	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.247749	$0.24776 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04129	$1.04128 \pm 0.00064$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8468	$1.845 \pm 0.014$
$\tau$	0.0919	$0.097^{+0.014}_{-0.017}$	$c_{217}$	0.99644	$0.9965 \pm 0.0014$	Age/Gyr	13.8101	$13.808 \pm 0.049$
$n_s$	0.9594	$0.9561 \pm 0.0080$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.616$	$z_*$	1090.35	$1090.32 \pm 0.54$
$dn_s/d \ln k$	-0.0090	$-0.0134 \pm 0.0090$	$A^{\text{kSZ}}$	2.90	—	$r_*$	144.42	$144.43 \pm 0.62$
$\ln(10^{10} A_s)$	3.0998	$3.109^{+0.028}_{-0.033}$	$\beta_1^1$	0.80	$0.64 \pm 0.57$	$100\theta_*$	1.04143	$1.04142 \pm 0.00063$
$A_{100}^{\text{PS}}$	152	$184 \pm 60$	$\Omega_\Lambda$	0.6812	$0.681 \pm 0.017$	$z_{\text{drag}}$	1059.59	$1059.60 \pm 0.63$
$A_{143}^{\text{PS}}$	59.1	$56 \pm 10$	$\Omega_m$	0.3188	$0.319 \pm 0.017$	$r_{\text{drag}}$	147.15	$147.15 \pm 0.63$
$A_{217}^{\text{PS}}$	119.4	$104^{+20}_{-20}$	$\sigma_8$	0.8333	$0.835 \pm 0.014$	$k_D$	0.14054	$0.14055 \pm 0.00070$
$A_{143}^{\text{CIB}}$	1.63	$< 12.1$	$z_{\text{re}}$	11.28	$11.7 \pm 1.3$	$100\theta_D$	0.161199	$0.16118 \pm 0.00036$
$A_{217}^{\text{CIB}}$	25.0	$31^{+7}_{-10}$	$H_0$	67.08	$67.1 \pm 1.2$	$z_{\text{eq}}$	3412	$3411 \pm 62$
$A_{143}^{\text{tSZ}}$	6.53	—	$10^9 A_s$	2.219	$2.240^{+0.061}_{-0.076}$	$100\theta_{\text{eq}}$	0.8112	$0.812 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.887	$> 0.842$	$\Omega_m h^2$	0.14345	$0.1434 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07122	$0.07126 \pm 0.00091$

Best-fit  $\chi_{\text{eff}}^2 = 9804.40$ ; R-1 = 0.00683

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.42 lowl: -8.85 CamSpec: 7798.20



### 13.2 base\_nrun\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022221	$0.02229 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.621	$0.47^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09613	$0.09619 \pm 0.00062$
$\Omega_c h^2$	0.11915	$0.1185 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.511	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247776	$0.24781 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04138	$1.04149 \pm 0.00062$	$c_{100}$	1.000587	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8353	$1.834 \pm 0.011$
$\tau$	0.0849	$0.093^{+0.013}_{-0.015}$	$c_{217}$	0.99632	$0.9964 \pm 0.0013$	Age/Gyr	13.7947	$13.781 \pm 0.047$
$n_s$	0.9584	$0.9615 \pm 0.0072$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.136	$1089.99 \pm 0.49$
$dn_s/d \ln k$	-0.0093	$-0.0094 \pm 0.0085$	$A^{\text{kSZ}}$	2.68	—	$r_*$	144.75	$144.88 \pm 0.50$
$\ln(10^{10} A_s)$	3.0796	$3.096^{+0.025}_{-0.029}$	$\beta_1^1$	0.55	$0.54 \pm 0.57$	$100\theta_*$	1.04152	$1.04162 \pm 0.00061$
$A_{100}^{\text{PS}}$	150	$178 \pm 60$	$\Omega_\Lambda$	0.6900	$0.694^{+0.015}_{-0.013}$	$z_{\text{drag}}$	1059.59	$1059.72 \pm 0.62$
$A_{143}^{\text{PS}}$	35.3	$52 \pm 10$	$\Omega_m$	0.3100	$0.306^{+0.013}_{-0.015}$	$r_{\text{drag}}$	147.48	$147.58 \pm 0.52$
$A_{217}^{\text{PS}}$	100.7	$102^{+20}_{-20}$	$\sigma_8$	0.8200	$0.824 \pm 0.010$	$k_D$	0.14025	$0.14019 \pm 0.00061$
$A_{143}^{\text{CIB}}$	10.6	$< 12.0$	$z_{\text{re}}$	10.62	$11.3 \pm 1.1$	$100\theta_D$	0.161174	$0.16112 \pm 0.00036$
$A_{217}^{\text{CIB}}$	33.7	$31^{+7}_{-9}$	$H_0$	67.69	$68.0 \pm 1.0$	$z_{\text{eq}}$	3378.2	$3363 \pm 49$
$A^{\text{tSZ}}_{143}$	9.97	—	$10^9 A_s$	2.175	$2.212^{+0.054}_{-0.064}$	$100\theta_{\text{eq}}$	0.8176	$0.8206 \pm 0.0095$
$r_{143 \times 217}^{\text{PS}}$	0.885	$> 0.838$	$\Omega_m h^2$	0.14202	$0.1414 \pm 0.0021$	$r_{\text{drag}}/D_V(0.57)$	0.07170	$0.07196 \pm 0.00077$

Best-fit  $\chi^2_{\text{eff}} = 9815.09$ ; R-1 = 0.01154

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.43 lensing: 9.91 lowl: -9.04 CamSpec: 7798.90

### 13.3 base\_nrun\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022240	$0.02227 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.610	$0.47^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09619	$0.09625 \pm 0.00064$
$\Omega_c h^2$	0.11904	$0.1191 \pm 0.0018$	$\gamma^{\text{CIB}}$	0.513	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247784	$0.24779 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04147	$1.04148 \pm 0.00057$	$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8360	$1.838 \pm 0.011$
$\tau$	0.0961	$0.099^{+0.014}_{-0.017}$	$c_{217}$	0.99640	$0.9965 \pm 0.0014$	Age/Gyr	13.7895	$13.787 \pm 0.040$
$n_s$	0.9599	$0.9596 \pm 0.0063$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.100	$1090.08 \pm 0.42$
$dn_s/d \ln k$	-0.0102	$-0.0127 \pm 0.0090$	$A^{\text{kSZ}}$	1.42	—	$r_*$	144.769	$144.74 \pm 0.45$
$\ln(10^{10} A_s)$	3.1023	$3.110^{+0.029}_{-0.034}$	$\beta_1^1$	0.62	$0.60 \pm 0.57$	$100\theta_*$	1.04161	$1.04162 \pm 0.00057$
$A_{100}^{\text{PS}}$	149	$181 \pm 60$	$\Omega_\Lambda$	0.6910	$0.691 \pm 0.011$	$z_{\text{drag}}$	1059.63	$1059.70 \pm 0.62$
$A_{143}^{\text{PS}}$	42.1	$55 \pm 10$	$\Omega_m$	0.3090	$0.309 \pm 0.011$	$r_{\text{drag}}$	147.484	$147.44 \pm 0.49$
$A_{217}^{\text{PS}}$	105.9	$104^{+20}_{-20}$	$\sigma_8$	0.8286	$0.831 \pm 0.013$	$k_D$	0.14025	$0.14031 \pm 0.00062$
$A_{143}^{\text{CIB}}$	8.70	$< 12.0$	$z_{\text{re}}$	11.57	$11.8 \pm 1.3$	$100\theta_D$	0.161164	$0.16113 \pm 0.00035$
$A_{217}^{\text{CIB}}$	32.7	$31^{+7}_{-10}$	$H_0$	67.78	$67.79 \pm 0.79$	$z_{\text{eq}}$	3375.9	$3378 \pm 41$
$A^{\text{tSZ}}_{143}$	10.0	—	$10^9 A_s$	2.225	$2.243^{+0.063}_{-0.079}$	$100\theta_{\text{eq}}$	0.8181	$0.8179 \pm 0.0076$
$r_{143 \times 217}^{\text{PS}}$	0.879	$> 0.841$	$\Omega_m h^2$	0.14192	$0.1420 \pm 0.0017$	$r_{\text{drag}}/D_V(0.57)$	0.07176	$0.07176 \pm 0.00060$

Best-fit  $\chi^2_{\text{eff}} = 9806.01$ ; R-1 = 0.00990

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.24 DR7: 1.23 6DF: 0.01 CMB - lowLike: 2014.50 lowl: -9.08 CamSpec: 7798.23

### 13.4 base\_nrun\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022356	$0.02240 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.614	$0.47^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.09629	$0.09636 \pm 0.00064$
$\Omega_c h^2$	0.11782	$0.1177 \pm 0.0024$	$\gamma^{\text{CIB}}$	0.512	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247834	$0.24785 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04168	$1.04171 \pm 0.00061$	$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8312	$1.832 \pm 0.013$
$\tau$	0.0974	$0.103^{+0.015}_{-0.018}$	$c_{217}$	0.99638	$0.9965 \pm 0.0013$	Age/Gyr	13.7661	$13.760 \pm 0.047$
$n_s$	0.9628	$0.9631 \pm 0.0075$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.847	$1089.79 \pm 0.50$
$dn_s/d \ln k$	-0.0105	$-0.0129 \pm 0.0091$	$A^{\text{kSZ}}$	0.8	—	$r_*$	145.00	$144.99 \pm 0.57$
$\ln(10^{10} A_s)$	3.1023	$3.114^{+0.030}_{-0.036}$	$\beta_1^1$	0.59	$0.56 \pm 0.58$	$100\theta_*$	1.04182	$1.04184 \pm 0.00060$
$A_{100}^{\text{PS}}$	151	$180 \pm 60$	$\Omega_\Lambda$	0.6988	$0.699^{+0.016}_{-0.013}$	$z_{\text{drag}}$	1059.82	$1059.91 \pm 0.63$
$A_{143}^{\text{PS}}$	41.7	$54 \pm 10$	$\Omega_m$	0.3012	$0.301^{+0.013}_{-0.016}$	$r_{\text{drag}}$	147.68	$147.66 \pm 0.59$
$A_{217}^{\text{PS}}$	105.6	$103^{+20}_{-20}$	$\sigma_8$	0.8248	$0.829 \pm 0.014$	$k_D$	0.14014	$0.14018 \pm 0.00068$
$A_{143}^{\text{CIB}}$	9.19	$< 12.1$	$z_{\text{re}}$	11.62	$12.0 \pm 1.3$	$100\theta_D$	0.161076	$0.16103 \pm 0.00036$
$A_{217}^{\text{CIB}}$	33.0	$31^{+7}_{-9}$	$H_0$	68.38	$68.5 \pm 1.1$	$z_{\text{eq}}$	3350	$3348 \pm 55$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.225	$2.252^{+0.064}_{-0.084}$	$100\theta_{\text{eq}}$	0.8234	$0.824 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.881	$> 0.841$	$\Omega_m h^2$	0.14082	$0.1408 \pm 0.0023$	$r_{\text{drag}}/D_V(0.57)$	0.07221	$0.07227 \pm 0.00084$

Best-fit  $\chi^2_{\text{eff}} = 9810.42$ ; R-1 = 0.01261

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.45 lowl: -9.31 CamSpec: 7799.29 Hubble - HST: 5.10

### 13.5 base\_nrun\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022273	$0.02230 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.468	$0.47^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.09621	$0.09626 \pm 0.00064$
$\Omega_c h^2$	0.11864	$0.1187 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.521	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247798	$0.24781 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04153	$1.04153 \pm 0.00063$	$c_{100}$	1.000593	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8343	$1.836 \pm 0.014$
$\tau$	0.0962	$0.100^{+0.014}_{-0.018}$	$c_{217}$	0.99633	$0.9965 \pm 0.0014$	Age/Gyr	13.7828	$13.779 \pm 0.048$
$n_s$	0.9608	$0.9607 \pm 0.0077$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.03	$1089.99 \pm 0.51$
$dn_s/d \ln k$	-0.0103	$-0.0127 \pm 0.0091$	$A^{\text{kSZ}}$	6.00	—	$r_*$	144.85	$144.83 \pm 0.59$
$\ln(10^{10} A_s)$	3.1017	$3.111^{+0.029}_{-0.035}$	$\beta_1^1$	0.65	$0.59 \pm 0.58$	$100\theta_*$	1.04166	$1.04167 \pm 0.00062$
$A_{100}^{\text{PS}}$	135	$181 \pm 60$	$\Omega_\Lambda$	0.6935	$0.693^{+0.016}_{-0.015}$	$z_{\text{drag}}$	1059.70	$1059.75 \pm 0.63$
$A_{143}^{\text{PS}}$	43.0	$54 \pm 10$	$\Omega_m$	0.3065	$0.307^{+0.015}_{-0.016}$	$r_{\text{drag}}$	147.55	$147.52 \pm 0.60$
$A_{217}^{\text{PS}}$	107.3	$104^{+20}_{-20}$	$\sigma_8$	0.8271	$0.830 \pm 0.014$	$k_D$	0.14021	$0.14026 \pm 0.00068$
$A_{143}^{\text{CIB}}$	4.58	$< 12.1$	$z_{\text{re}}$	11.56	$11.9 \pm 1.3$	$100\theta_D$	0.161138	$0.16111 \pm 0.00036$
$A_{217}^{\text{CIB}}$	28.2	$31^{+7}_{-10}$	$H_0$	67.96	$68.0 \pm 1.1$	$z_{\text{eq}}$	3367	$3368 \pm 57$
$A_{143}^{\text{tSZ}}$	8.94	—	$10^9 A_s$	2.224	$2.245^{+0.063}_{-0.081}$	$100\theta_{\text{eq}}$	0.8198	$0.820 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.841$	$\Omega_m h^2$	0.14156	$0.1416 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07190	$0.07192 \pm 0.00086$

Best-fit  $\chi^2_{\text{eff}} = 10233.79$ ; R-1 = 0.01014

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.47 lowl: -9.17 CamSpec: 7798.60 SN - SNLS: 429.08

### 13.6 base\_nrun\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022190	$0.02222 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.581	$0.47^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09617	$0.09625 \pm 0.00063$
$\Omega_c h^2$	0.11972	$0.1199 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.518	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247763	$0.24778 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04137	$1.04137 \pm 0.00063$	$c_{100}$	1.000582	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8391	$1.842 \pm 0.014$
$\tau$	0.0950	$0.098^{+0.014}_{-0.017}$	$c_{217}$	0.99636	$0.9965 \pm 0.0014$	Age/Gyr	13.8006	$13.797 \pm 0.048$
$n_s$	0.9586	$0.9578 \pm 0.0077$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.22	$1090.20 \pm 0.52$
$dn_s/d \ln k$	-0.0102	$-0.0131 \pm 0.0090$	$A^{\text{kSZ}}$	1.42	—	$r_*$	144.63	$144.57 \pm 0.60$
$\ln(10^{10} A_s)$	3.1019	$3.109^{+0.029}_{-0.034}$	$\beta_1^1$	0.63	$0.62 \pm 0.58$	$100\theta_*$	1.04151	$1.04151 \pm 0.00062$
$A_{100}^{\text{PS}}$	152	$183 \pm 60$	$\Omega_\Lambda$	0.6867	$0.686 \pm 0.016$	$z_{\text{drag}}$	1059.59	$1059.66 \pm 0.63$
$A_{143}^{\text{PS}}$	42.9	$55 \pm 10$	$\Omega_m$	0.3133	$0.314 \pm 0.016$	$r_{\text{drag}}$	147.36	$147.29 \pm 0.61$
$A_{217}^{\text{PS}}$	107.4	$104^{+20}_{-20}$	$\sigma_8$	0.8305	$0.833 \pm 0.014$	$k_D$	0.14034	$0.14044 \pm 0.00069$
$A_{143}^{\text{CIB}}$	8.72	$< 12.1$	$z_{\text{re}}$	11.52	$11.7 \pm 1.3$	$100\theta_D$	0.161197	$0.16116 \pm 0.00036$
$A_{217}^{\text{CIB}}$	32.1	$31^{+7}_{-10}$	$H_0$	67.46	$67.5 \pm 1.1$	$z_{\text{eq}}$	3391	$3395 \pm 59$
$A_{143}^{\text{tSZ}}$	9.62	—	$10^9 A_s$	2.224	$2.242^{+0.062}_{-0.078}$	$100\theta_{\text{eq}}$	0.8152	$0.815 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.841$	$\Omega_m h^2$	0.14256	$0.1427 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07152	$0.07150 \pm 0.00087$

Best-fit  $\chi^2_{\text{eff}} = 9934.78$ ; R-1 = 0.00824

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.48 lowl: -8.98 CamSpec: 7797.95 SN - Union2.1: 130.50

### 13.7 base\_nrun\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022184	$0.02225 \pm 0.00029$	$\beta_1^1$	0.56	$0.52 \pm 0.56$	$\sigma_8$	0.8320	$0.836 \pm 0.014$
$\Omega_c h^2$	0.12073	$0.1205 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.24	$10.51 \pm 0.59$	$z_{\text{re}}$	11.38	$11.9 \pm 1.2$
$100\theta_{\text{MC}}$	1.04128	$1.04131 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	75.42	$76.6 \pm 4.5$	$H_0$	67.07	$67.2 \pm 1.2$
$\tau$	0.0931	$0.100^{+0.014}_{-0.017}$	$A_{95}^{\text{PS, SPT}}$	7.35	$7.60^{+1.3}_{-1.7}$	$10^9 A_s$	2.220	$2.254^{+0.063}_{-0.077}$
$n_s$	0.9552	$0.9548 \pm 0.0073$	$A_{150}^{\text{PS, SPT}}$	9.70	$10.01 \pm 0.51$	$\Omega_m h^2$	0.14356	$0.1434 \pm 0.0026$
$dn_s/d \ln k$	-0.0106	$-0.0149 \pm 0.0085$	$A_{220}^{\text{PS, SPT}}$	72.49	$74.2 \pm 4.5$	$\Omega_m h^3$	0.09629	$0.09638 \pm 0.00063$
$\ln(10^{10} A_s)$	3.1003	$3.115^{+0.029}_{-0.034}$	$r_{95 \times 150}^{\text{PS}}$	0.793	$0.833 \pm 0.090$	$Y_p$	0.247760	$0.24779 \pm 0.00012$
$A_{100}^{\text{PS}}$	216	$224 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.542	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8433	$1.844 \pm 0.014$
$A_{143}^{\text{PS}}$	76.6	$77.3 \pm 8.5$	$r_{150 \times 220}^{\text{PS}}$	0.9102	$0.937 \pm 0.023$	Age/Gyr	13.8079	$13.799 \pm 0.048$
$A_{217}^{\text{PS}}$	62.8	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.431	$0.44 \pm 0.19$	$z_*$	1090.32	$1090.23 \pm 0.53$
$A_{143}^{\text{CIB}}$	3.18	$3.22 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.852	$0.85 \pm 0.20$	$r_*$	144.37	$144.39 \pm 0.62$
$A_{217}^{\text{CIB}}$	52.63	$49.3 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9892	$0.9902 \pm 0.0074$	$100\theta_*$	1.04142	$1.04145 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	4.45	$2.35^{+0.99}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0006	$1.003 \pm 0.013$	$z_{\text{drag}}$	1059.63	$1059.76 \pm 0.61$
$r_{143 \times 217}^{\text{PS}}$	0.831	$0.830 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9856	$0.9863 \pm 0.0073$	$r_{\text{drag}}$	147.10	$147.09 \pm 0.63$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9593	$0.962 \pm 0.010$	$k_D$	0.14061	$0.14067 \pm 0.00070$
$\gamma^{\text{CIB}}$	0.660	$0.630 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9802	$0.980 \pm 0.020$	$100\theta_D$	0.161159	$0.16109 \pm 0.00035$
$c_{100}$	1.000579	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9817	$0.9846 \pm 0.0097$	$z_{\text{eq}}$	3415	$3411 \pm 62$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0166	$1.022^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8108	$0.812 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.457$	$\Omega_\Lambda$	0.6809	$0.682 \pm 0.017$	$r_{\text{drag}}/D_V(0.57)$	0.07120	$0.07130 \pm 0.00091$
$A^{\text{kSZ}}$	1.99	$5.65^{+2.7}_{-1.8}$	$\Omega_m$	0.3191	$0.318 \pm 0.017$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.60$ ; R-1 =0.00997

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.45 lowl: -8.71 CamSpec: 7807.62 highL: 693.11

### 13.8 base\_nrun\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022298	$0.02235 \pm 0.00029$	$\beta_1^1$	0.49	$0.45 \pm 0.56$	$\sigma_8$	0.8270	$0.825 \pm 0.010$
$\Omega_c h^2$	0.11849	$0.1185 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.41	$10.66^{+0.55}_{-0.62}$	$z_{\text{re}}$	11.50	$11.5 \pm 1.2$
$100\theta_{\text{MC}}$	1.04152	$1.04152 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.20	$76.9^{+5.1}_{-4.4}$	$H_0$	68.03	$68.1 \pm 1.0$
$\tau$	0.0956	$0.096^{+0.013}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.55	$7.74^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.223^{+0.054}_{-0.067}$
$n_s$	0.9613	$0.9599 \pm 0.0065$	$A_{150}^{\text{PS, SPT}}$	9.92	$10.19 \pm 0.51$	$\Omega_m h^2$	0.14144	$0.1415^{+0.0023}_{-0.0020}$
$dn_s/d \ln k$	-0.0070	$-0.0114 \pm 0.0079$	$A_{220}^{\text{PS, SPT}}$	73.26	$74.5 \pm 4.5$	$\Omega_m h^3$	0.09622	$0.09631 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0994	$3.101^{+0.025}_{-0.030}$	$r_{95 \times 150}^{\text{PS}}$	0.797	$0.837 \pm 0.089$	$Y_{\text{P}}$	0.247809	$0.24783 \pm 0.00012$
$A_{100}^{\text{PS}}$	212	$221 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.543	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8324	$1.834 \pm 0.011$
$A_{143}^{\text{PS}}$	74.3	$75.9 \pm 8.4$	$r_{150 \times 220}^{\text{PS}}$	0.9071	$0.934^{+0.023}_{-0.027}$	Age/Gyr	13.7802	$13.774 \pm 0.047$
$A_{217}^{\text{PS}}$	61.4	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.417	$0.44 \pm 0.19$	$z_*$	1089.981	$1089.92 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.24	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.84 \pm 0.20$	$r_*$	144.87	$144.83 \pm 0.51$
$A_{217}^{\text{CIB}}$	52.4	$49.6 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9908	$0.9912 \pm 0.0073$	$100\theta_*$	1.04164	$1.04165 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	4.57	$2.42^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0025	$1.005 \pm 0.014$	$z_{\text{drag}}$	1059.74	$1059.85 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.830 \pm 0.069$	$y_{148}^{\text{ACTe}}$	0.9871	$0.9875 \pm 0.0073$	$r_{\text{drag}}$	147.56	$147.51 \pm 0.52$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9609	$0.963 \pm 0.010$	$k_{\text{D}}$	0.14021	$0.14030 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.657	$0.632 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9836	$0.983 \pm 0.020$	$100\theta_{\text{D}}$	0.161106	$0.16104 \pm 0.00035$
$c_{100}$	1.000596	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9874 \pm 0.0098$	$z_{\text{eq}}$	3364	$3365^{+54}_{-49}$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0180	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8204	$0.8205^{+0.0092}_{-0.011}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.427$	$\Omega_{\Lambda}$	0.6944	$0.695 \pm 0.014$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07195	$0.07198^{+0.00075}_{-0.00085}$
$A^{\text{kSZ}}$	1.24	$4.90^{+2.7}_{-1.9}$	$\Omega_{\text{m}}$	0.3056	$0.305 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10515.83$ ; R-1 =0.03679

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.44 lensing: 9.89 lowl: -8.60 CamSpec: 7808.48 highL: 691.51

### 13.9 base\_nrun\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022259	$0.02233 \pm 0.00027$	$\beta_1^1$	0.50	$0.49 \pm 0.56$	$\sigma_8$	0.8277	$0.833^{+0.013}_{-0.014}$
$\Omega_c h^2$	0.11930	$0.1191 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.52 \pm 0.59$	$z_{\text{re}}$	11.45	$12.1 \pm 1.2$
$100\theta_{\text{MC}}$	1.04146	$1.04150 \pm 0.00057$	$A_{218}^{\text{PS, ACT}}$	76.78	$76.7 \pm 4.5$	$H_0$	67.70	$67.83 \pm 0.78$
$\tau$	0.0946	$0.103^{+0.014}_{-0.017}$	$A_{95}^{\text{PS, SPT}}$	7.40	$7.57^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.257^{+0.065}_{-0.078}$
$n_s$	0.9579	$0.9580 \pm 0.0057$	$A_{150}^{\text{PS, SPT}}$	9.96	$10.03 \pm 0.51$	$\Omega_m h^2$	0.14221	$0.1421 \pm 0.0017$
$dn_s/d \ln k$	-0.0103	$-0.0143 \pm 0.0085$	$A_{220}^{\text{PS, SPT}}$	73.87	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09627	$0.09638 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0998	$3.116^{+0.030}_{-0.034}$	$r_{95 \times 150}^{\text{PS}}$	0.801	$0.834^{+0.11}_{-0.091}$	$Y_P$	0.247792	$0.24782 \pm 0.00011$
$A_{100}^{\text{PS}}$	216	$223 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.569	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8367	$1.837 \pm 0.011$
$A_{143}^{\text{PS}}$	76.2	$76.4 \pm 8.5$	$r_{150 \times 220}^{\text{PS}}$	0.9194	$0.937^{+0.023}_{-0.026}$	Age/Gyr	13.7888	$13.780 \pm 0.039$
$A_{217}^{\text{PS}}$	62.8	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.43 \pm 0.19$	$z_*$	1090.099	$1090.00 \pm 0.41$
$A_{143}^{\text{CIB}}$	3.05	$3.23 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.84 \pm 0.20$	$r_*$	144.686	$144.68 \pm 0.45$
$A_{217}^{\text{CIB}}$	50.23	$49.3 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9903	$0.9907 \pm 0.0074$	$100\theta_*$	1.04161	$1.04163 \pm 0.00057$
$A_{143}^{\text{tSZ}}$	3.52	$2.39^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0027	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.70	$1059.85 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.830 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9864	$0.9866 \pm 0.0073$	$r_{\text{drag}}$	147.392	$147.36 \pm 0.49$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9612	$0.962 \pm 0.010$	$k_D$	0.14036	$0.14044 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.633	$0.629 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9808	$0.981 \pm 0.019$	$100\theta_D$	0.161130	$0.16105 \pm 0.00035$
$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9836	$0.9853 \pm 0.0097$	$z_{\text{eq}}$	3382.6	$3380 \pm 41$
$c_{217}$	0.99740	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0174	$1.023^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8169	$0.8177 \pm 0.0076$
$\xi^{\text{tSZ-CIB}}$	0.129	$< 0.454$	$\Omega_\Lambda$	0.6897	$0.691 \pm 0.010$	$r_{\text{drag}}/D_V(0.57)$	0.07169	$0.07176 \pm 0.00059$
$A^{\text{kSZ}}$	3.89	$5.61^{+2.7}_{-1.8}$	$\Omega_m$	0.3103	$0.309 \pm 0.010$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.14$ ; R-1 = 0.01626

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.40 DR9: 0.18 6DF: 0.01 CMB - lowLike: 2014.42 lowl: -8.93 CamSpec: 7808.26 highL: 692.62



### 13.10 base\_nrun\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022352	$0.02246 \pm 0.00029$	$\beta_1^1$	0.43	$0.46 \pm 0.57$	$\sigma_8$	0.8232	$0.830 \pm 0.015$
$\Omega_c h^2$	0.11750	$0.1177 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.45	$10.53 \pm 0.59$	$z_{\text{re}}$	11.59	$12.2 \pm 1.3$
$100\theta_{\text{MC}}$	1.04171	$1.04174 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.85	$76.9^{+4.8}_{-4.3}$	$H_0$	68.49	$68.5 \pm 1.1$
$\tau$	0.0972	$0.106^{+0.015}_{-0.018}$	$A_{95}^{\text{PS, SPT}}$	7.44	$7.58^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.264^{+0.065}_{-0.083}$
$n_s$	0.9626	$0.9614 \pm 0.0070$	$A_{150}^{\text{PS, SPT}}$	9.970	$10.06 \pm 0.51$	$\Omega_m h^2$	0.14050	$0.1408 \pm 0.0024$
$dn_s/d \ln k$	-0.0081	$-0.0144 \pm 0.0086$	$A_{220}^{\text{PS, SPT}}$	73.92	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09623	$0.09647 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0999	$3.119^{+0.030}_{-0.036}$	$r_{95 \times 150}^{\text{PS}}$	0.797	$0.836^{+0.11}_{-0.089}$	$Y_P$	0.247832	$0.24788 \pm 0.00012$
$A_{100}^{\text{PS}}$	212	$222 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.562	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8276	$1.832 \pm 0.013$
$A_{143}^{\text{PS}}$	74.5	$75 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9184	$0.937 \pm 0.024$	Age/Gyr	13.7645	$13.754 \pm 0.046$
$A_{217}^{\text{PS}}$	61.4	$61 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1089.824	$1089.72 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.05	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.843	$0.85 \pm 0.20$	$r_*$	145.08	$144.96 \pm 0.59$
$A_{217}^{\text{CIB}}$	50.5	$49.3 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9912 \pm 0.0074$	$100\theta_*$	1.04184	$1.04186 \pm 0.00061$
$A_{143}^{\text{tSZ}}$	3.66	$2.41^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0035	$1.005 \pm 0.014$	$z_{\text{drag}}$	1059.78	$1060.04 \pm 0.61$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.830 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9872	$0.9873 \pm 0.0073$	$r_{\text{drag}}$	147.77	$147.60 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9620	$0.963 \pm 0.010$	$k_D$	0.14004	$0.14029 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.637	$0.629 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9825	$0.982 \pm 0.019$	$100\theta_D$	0.161095	$0.16096 \pm 0.00035$
$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9867 \pm 0.0098$	$z_{\text{eq}}$	3342	$3349 \pm 57$
$c_{217}$	0.99736	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0182	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8248	$0.824 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.106	$< 0.458$	$\Omega_\Lambda$	0.7005	$0.700 \pm 0.015$	$r_{\text{drag}}/D_V(0.57)$	0.07231	$0.07229 \pm 0.00086$
$A^{\text{kSZ}}$	3.64	$5.57^{+2.7}_{-1.8}$	$\Omega_m$	0.2995	$0.300 \pm 0.015$			

Best-fit  $\chi_{\text{eff}}^2 = 10512.85$ ; R-1 = 0.02996

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.45 lowl: -8.95 CamSpec: 7809.83 highL: 692.47 Hubble - HST: 4.88

### 13.11 base\_nrun\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022231	$0.02236 \pm 0.00029$	$\beta_1^1$	0.48	$0.48 \pm 0.56$	$\sigma_8$	0.8272	$0.832 \pm 0.014$
$\Omega_c h^2$	0.11914	$0.1186 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.48	$10.52 \pm 0.59$	$z_{\text{re}}$	11.49	$12.1 \pm 1.3$
$100\theta_{\text{MC}}$	1.04129	$1.04156 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.84	$76.8^{+4.8}_{-4.3}$	$H_0$	67.67	$68.1 \pm 1.1$
$\tau$	0.0951	$0.104^{+0.015}_{-0.017}$	$A_{95}^{\text{PS, SPT}}$	7.40	$7.57^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.259^{+0.065}_{-0.080}$
$n_s$	0.9579	$0.9591 \pm 0.0071$	$A_{150}^{\text{PS, SPT}}$	9.98	$10.04 \pm 0.51$	$\Omega_m h^2$	0.14201	$0.1416 \pm 0.0024$
$dn_s/d \ln k$	-0.0099	$-0.0142 \pm 0.0086$	$A_{220}^{\text{PS, SPT}}$	73.98	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09610	$0.09638 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0999	$3.117^{+0.030}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.802	$0.835^{+0.11}_{-0.090}$	$Y_P$	0.247780	$0.24784 \pm 0.00012$
$A_{100}^{\text{PS}}$	216	$222 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.572	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8352	$1.835 \pm 0.014$
$A_{143}^{\text{PS}}$	76.3	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9202	$0.937^{+0.023}_{-0.026}$	Age/Gyr	13.7962	$13.772 \pm 0.047$
$A_{217}^{\text{PS}}$	62.7	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.12	$1089.91 \pm 0.50$
$A_{143}^{\text{CIB}}$	3.04	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.75	$144.78 \pm 0.60$
$A_{217}^{\text{CIB}}$	50.1	$49.3 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9902	$0.9908 \pm 0.0074$	$100\theta_*$	1.04143	$1.04169 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	3.42	$2.39^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0028	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.63	$1059.90 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.830 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9864	$0.9869 \pm 0.0073$	$r_{\text{drag}}$	147.47	$147.46 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9614	$0.963 \pm 0.010$	$k_D$	0.14026	$0.14037 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.631	$0.629 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9807	$0.982 \pm 0.019$	$100\theta_D$	0.161146	$0.16103 \pm 0.00035$
$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9836	$0.9858 \pm 0.0098$	$z_{\text{eq}}$	3378	$3369 \pm 58$
$c_{217}$	0.99739	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0177	$1.023^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8175	$0.820 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.145	$< 0.457$	$\Omega_\Lambda$	0.6899	$0.694 \pm 0.015$	$r_{\text{drag}}/D_V(0.57)$	0.07169	$0.07194 \pm 0.00087$
$A^{\text{kSZ}}$	4.08	$5.60^{+2.7}_{-1.8}$	$\Omega_m$	0.3101	$0.306 \pm 0.015$			

Best-fit  $\chi_{\text{eff}}^2 = 10936.10$ ; R-1 = 0.01868

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.46 lowl: -8.86 CamSpec: 7808.33 highL: 692.58 SN - SNLS: 429.41

### 13.12 base\_nrun\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022219	$0.02229 \pm 0.00029$	$\beta_1^1$	0.50	$0.51 \pm 0.56$	$\sigma_8$	0.8288	$0.835 \pm 0.014$
$\Omega_c h^2$	0.11956	$0.1198 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.45	$10.52 \pm 0.59$	$z_{\text{re}}$	11.47	$12.0 \pm 1.3$
$100\theta_{\text{MC}}$	1.04131	$1.04140 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.72	$76.7 \pm 4.5$	$H_0$	67.52	$67.5 \pm 1.1$
$\tau$	0.0946	$0.102^{+0.014}_{-0.017}$	$A_{95}^{\text{PS, SPT}}$	7.41	$7.57^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.256^{+0.064}_{-0.078}$
$n_s$	0.9578	$0.9563 \pm 0.0071$	$A_{150}^{\text{PS, SPT}}$	9.95	$10.02 \pm 0.51$	$\Omega_m h^2$	0.14242	$0.1428 \pm 0.0025$
$dn_s/d \ln k$	-0.0099	$-0.0146 \pm 0.0086$	$A_{220}^{\text{PS, SPT}}$	73.81	$74.3 \pm 4.5$	$\Omega_m h^3$	0.09617	$0.09638 \pm 0.00063$
$\ln(10^{10} A_s)$	3.1000	$3.116^{+0.029}_{-0.034}$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.834^{+0.11}_{-0.091}$	$Y_P$	0.247775	$0.24780 \pm 0.00012$
$A_{100}^{\text{PS}}$	215	$224 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.565	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8371	$1.841 \pm 0.014$
$A_{143}^{\text{PS}}$	75.8	$76.9 \pm 8.5$	$r_{150 \times 220}^{\text{PS}}$	0.9188	$0.937^{+0.023}_{-0.026}$	Age/Gyr	13.7985	$13.790 \pm 0.047$
$A_{217}^{\text{PS}}$	62.6	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1090.17	$1090.12 \pm 0.51$
$A_{143}^{\text{CIB}}$	3.04	$3.23 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.65	$144.53 \pm 0.60$
$A_{217}^{\text{CIB}}$	50.36	$49.2 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9904	$0.9904 \pm 0.0074$	$100\theta_*$	1.04146	$1.04154 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	3.58	$2.37^{+0.99}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0027	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.63	$1059.81 \pm 0.61$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.830 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9865 \pm 0.0073$	$r_{\text{drag}}$	147.37	$147.22 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9612	$0.962 \pm 0.010$	$k_D$	0.14036	$0.14056 \pm 0.00069$
$\gamma^{\text{CIB}}$	0.636	$0.629 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9810	$0.981 \pm 0.019$	$100\theta_D$	0.161153	$0.16107 \pm 0.00035$
$c_{100}$	1.000585	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9836	$0.9850 \pm 0.0098$	$z_{\text{eq}}$	3388	$3396 \pm 59$
$c_{217}$	0.99741	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0174	$1.022^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8158	$0.815 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.117	$< 0.457$	$\Omega_\Lambda$	0.6876	$0.686 \pm 0.016$	$r_{\text{drag}}/D_V(0.57)$	0.07156	$0.07153 \pm 0.00087$
$A^{\text{kSZ}}$	3.76	$5.62^{+2.7}_{-1.8}$	$\Omega_m$	0.3124	$0.314 \pm 0.016$			

Best-fit  $\chi_{\text{eff}}^2 = 10637.02$ ; R-1 = 0.01269

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.46 lowl: -8.87 CamSpec: 7808.13 highL: 692.64 SN - Union2.1: 130.48

### 13.13 base\_nrun\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02214	$0.02297^{+0.00055}_{-0.00071}$	$r_{143 \times 217}^{\text{CIB}}$	0.345	$0.43 \pm 0.23$	$\Omega_m h^3$	0.09620	$0.09721^{+0.00087}_{-0.00099}$
$\Omega_c h^2$	0.12083	$0.1156 \pm 0.0042$	$\gamma^{\text{CIB}}$	0.574	$0.53 \pm 0.13$	$Y_P$	0.247741	$0.24809^{+0.00024}_{-0.00029}$
$100\theta_{\text{MC}}$	1.04124	$1.04211 \pm 0.00086$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8483	$1.829 \pm 0.017$
$\tau$	0.091	$0.211 \pm 0.070$	$c_{217}$	0.99652	$0.9964 \pm 0.0014$	Age/Gyr	13.814	$13.68^{+0.11}_{-0.091}$
$n_s$	0.9593	$0.974^{+0.014}_{-0.017}$	$\xi^{\text{tSZ-CIB}}$	0.13	—	$z_*$	1090.39	$1088.9^{+1.2}_{-1.0}$
$dn_s/d \ln k$	-0.0096	$-0.034^{+0.020}_{-0.015}$	$A^{\text{kSZ}}$	1.83	—	$r_*$	144.38	$145.11 \pm 0.75$
$\ln(10^{10} A_s)$	3.099	$3.33 \pm 0.13$	$\beta_1^1$	0.82	$0.55 \pm 0.57$	$100\theta_*$	1.04139	$1.04218 \pm 0.00081$
$A_{100}^{\text{PS}}$	161	$169 \pm 60$	$\Omega_\Lambda$	0.6799	$0.713 \pm 0.026$	$z_{\text{drag}}$	1059.55	$1061.1^{+1.1}_{-1.3}$
$A_{143}^{\text{PS}}$	67.1	$52 \pm 10$	$\Omega_m$	0.3201	$0.287 \pm 0.026$	$r_{\text{drag}}$	147.12	$147.59 \pm 0.67$
$A_{217}^{\text{PS}}$	119.9	$105^{+20}_{-20}$	$\sigma_8$	0.8333	$0.910 \pm 0.046$	$k_D$	0.14056	$0.14066 \pm 0.00068$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$z_{\text{re}}$	11.20	$19.1^{+4.9}_{-3.5}$	$100\theta_D$	0.16121	$0.16042 \pm 0.00060$
$A_{217}^{\text{CIB}}$	26.0	$29^{+6}_{-9}$	$H_0$	66.98	$69.9^{+2.1}_{-2.5}$	$z_{\text{eq}}$	3416	$3312 \pm 88$
$A_{143}^{\text{tSZ}}$	6.03	—	$10^9 A_s$	2.217	$2.81^{+0.33}_{-0.44}$	$100\theta_{\text{eq}}$	0.8104	$0.833^{+0.018}_{-0.020}$
$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.849$	$\Omega_m h^2$	0.14362	$0.1392 \pm 0.0037$	$r_{\text{drag}}/D_V(0.57)$	0.07115	$0.0731^{+0.0015}_{-0.0018}$

Best-fit  $\chi^2_{\text{eff}} = 7790.32$ ; R-1 = 0.00731

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.96 CamSpec: 7798.89

### 13.14 base\_nrun\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022200	$0.02236 \pm 0.00038$	$r_{143 \times 217}^{\text{CIB}}$	0.539	$0.47^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.09616	$0.09625 \pm 0.00064$
$\Omega_c h^2$	0.11960	$0.1179^{+0.0036}_{-0.0033}$	$\gamma^{\text{CIB}}$	0.519	$0.53 \pm 0.12$	$Y_P$	0.247767	$0.24783 \pm 0.00016$
$100\theta_{\text{MC}}$	1.04137	$1.04157 \pm 0.00072$	$c_{100}$	1.000603	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8375	$1.832 \pm 0.016$
$\tau$	0.0809	$0.103^{+0.035}_{-0.040}$	$c_{217}$	0.99632	$0.9964 \pm 0.0013$	Age/Gyr	13.799	$13.769 \pm 0.066$
$n_s$	0.9571	$0.964 \pm 0.010$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.20	$1089.86 \pm 0.72$
$dn_s/d \ln k$	-0.0095	$-0.0107 \pm 0.0090$	$A^{\text{kSZ}}$	7.25	—	$r_*$	144.65	$144.97^{+0.67}_{-0.77}$
$\ln(10^{10} A_s)$	3.073	$3.114^{+0.064}_{-0.073}$	$\beta_1^1$	0.64	$0.52 \pm 0.58$	$100\theta_*$	1.04150	$1.04170 \pm 0.00070$
$A_{100}^{\text{PS}}$	133	$175^{+70}_{-60}$	$\Omega_\Lambda$	0.6874	$0.697 \pm 0.021$	$z_{\text{drag}}$	1059.59	$1059.84^{+0.78}_{-0.70}$
$A_{143}^{\text{PS}}$	34.1	$51 \pm 10$	$\Omega_m$	0.3126	$0.303 \pm 0.021$	$r_{\text{drag}}$	147.38	$147.65 \pm 0.67$
$A_{217}^{\text{PS}}$	100.9	$102^{+20}_{-20}$	$\sigma_8$	0.8184	$0.830 \pm 0.020$	$k_D$	0.14033	$0.14016 \pm 0.00067$
$A_{143}^{\text{CIB}}$	6.68	$< 12.4$	$z_{\text{re}}$	10.27	$11.8^{+3.2}_{-2.8}$	$100\theta_D$	0.161184	$0.16106 \pm 0.00041$
$A_{217}^{\text{CIB}}$	30.0	$31^{+7}_{-9}$	$H_0$	67.51	$68.3 \pm 1.6$	$z_{\text{eq}}$	3388	$3352 \pm 75$
$A^{\text{tSZ}}_{143}$	9.77	—	$10^9 A_s$	2.160	$2.26^{+0.13}_{-0.17}$	$100\theta_{\text{eq}}$	0.8157	$0.823 \pm 0.015$
$r_{143 \times 217}^{\text{PS}}$	0.899	$> 0.840$	$\Omega_m h^2$	0.14244	$0.1409 \pm 0.0031$	$r_{\text{drag}}/D_V(0.57)$	0.07156	$0.0722^{+0.0011}_{-0.0013}$

Best-fit  $\chi^2_{\text{eff}} = 7800.74$ ; R-1 = 0.07717

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.99 lowl: -9.02 CamSpec: 7798.94

### 13.15 base\_nrun\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022331	$0.02267 \pm 0.00037$	$r_{143 \times 217}^{\text{CIB}}$	0.436	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09633	$0.09689 \pm 0.00075$
$\Omega_c h^2$	0.11876	$0.1178 \pm 0.0019$	$\gamma^{\text{CIB}}$	0.523	$0.54 \pm 0.12$	$Y_P$	0.247823	$0.24797 \pm 0.00016$
$100\theta_{\text{MC}}$	1.04153	$1.04175 \pm 0.00060$	$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8374	$1.837 \pm 0.011$
$\tau$	0.1164	$0.178 \pm 0.047$	$c_{217}$	0.99637	$0.9964 \pm 0.0014$	Age/Gyr	13.778	$13.732 \pm 0.052$
$n_s$	0.9622	$0.9664 \pm 0.0077$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.96	$1089.46 \pm 0.55$
$dn_s/d \ln k$	-0.0131	$-0.027^{+0.014}_{-0.012}$	$A^{\text{kSZ}}$	4.10	—	$r_*$	144.771	$144.76 \pm 0.44$
$\ln(10^{10} A_s)$	3.144	$3.267 \pm 0.093$	$\beta_1^1$	0.69	$0.59 \pm 0.57$	$100\theta_*$	1.04166	$1.04185 \pm 0.00059$
$A_{100}^{\text{PS}}$	136	$174 \pm 60$	$\Omega_\Lambda$	0.6932	$0.701 \pm 0.012$	$z_{\text{drag}}$	1059.82	$1060.54 \pm 0.80$
$A_{143}^{\text{PS}}$	49.3	$54 \pm 10$	$\Omega_m$	0.3068	$0.299 \pm 0.012$	$r_{\text{drag}}$	147.455	$147.34 \pm 0.48$
$A_{217}^{\text{PS}}$	111.9	$105^{+20}_{-20}$	$\sigma_8$	0.8447	$0.892 \pm 0.037$	$k_D$	0.14035	$0.14072 \pm 0.00065$
$A_{143}^{\text{CIB}}$	3.27	$< 11.2$	$z_{\text{re}}$	13.21	$17.4^{+3.6}_{-2.7}$	$100\theta_D$	0.161054	$0.16067 \pm 0.00044$
$A_{217}^{\text{CIB}}$	27.3	$30^{+6}_{-9}$	$H_0$	67.97	$68.67 \pm 0.97$	$z_{\text{eq}}$	3371.5	$3357 \pm 42$
$A_{143}^{\text{tSZ}}$	8.65	—	$10^9 A_s$	2.319	$2.63 \pm 0.24$	$100\theta_{\text{eq}}$	0.8192	$0.8231 \pm 0.0083$
$r_{143 \times 217}^{\text{PS}}$	0.883	$> 0.847$	$\Omega_m h^2$	0.14174	$0.1411 \pm 0.0018$	$r_{\text{drag}}/D_V(0.57)$	0.07187	$0.07228 \pm 0.00068$

Best-fit  $\chi^2_{\text{eff}} = 7790.21$ ; R-1 = 0.01221

$\chi^2_{\text{eff}}$ : BAO - DR7: 1.00 6DF: 0.02 DR9: 0.35 CMB - lowl: -9.26 CamSpec: 7797.31

### 13.16 base\_nrun\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02237	$0.02345 \pm 0.00054$	$r_{143 \times 217}^{\text{CIB}}$	0.396	$0.41^{+0.22}_{-0.28}$	$\Omega_m h^3$	0.09629	$0.09772^{+0.00083}_{-0.00094}$
$\Omega_c h^2$	0.11773	$0.1122 \pm 0.0032$	$\gamma^{\text{CIB}}$	0.525	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247838	$0.24829 \pm 0.00022$
$100\theta_{\text{MC}}$	1.04169	$1.04269 \pm 0.00074$	$c_{100}$	1.000598	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8313	$1.817 \pm 0.014$
$\tau$	0.102	$0.262^{+0.063}_{-0.056}$	$c_{217}$	0.99631	$0.9964 \pm 0.0014$	Age/Gyr	13.765	$13.599^{+0.091}_{-0.080}$
$n_s$	0.9625	$0.986 \pm 0.012$	$\xi^{\text{tSZ}-\text{CIB}}$	0.00	—	$z_*$	1089.83	$1088.07 \pm 0.83$
$dn_s/d \ln k$	-0.0119	$-0.044^{+0.018}_{-0.016}$	$A^{\text{kSZ}}$	7.95	$< 5.90$	$r_*$	145.01	$145.64 \pm 0.60$
$\ln(10^{10} A_s)$	3.111	$3.42^{+0.12}_{-0.11}$	$\beta_1^1$	0.65	$0.48 \pm 0.56$	$100\theta_*$	1.04181	$1.04272 \pm 0.00070$
$A_{100}^{\text{PS}}$	132	$162 \pm 60$	$\Omega_\Lambda$	0.6993	$0.734^{+0.020}_{-0.017}$	$z_{\text{drag}}$	1059.86	$1061.9 \pm 1.0$
$A_{143}^{\text{PS}}$	41.7	$50 \pm 10$	$\Omega_m$	0.3007	$0.266^{+0.017}_{-0.020}$	$r_{\text{drag}}$	147.69	$147.99 \pm 0.57$
$A_{217}^{\text{PS}}$	106.3	$105^{+20}_{-20}$	$\sigma_8$	0.8275	$0.939^{+0.044}_{-0.038}$	$k_D$	0.14013	$0.14057 \pm 0.00068$
$A_{143}^{\text{CIB}}$	3.65	$< 10.4$	$z_{\text{re}}$	11.96	$22^{+4}_{-2}$	$100\theta_D$	0.16107	$0.16002 \pm 0.00052$
$A_{217}^{\text{CIB}}$	26.9	$28^{+6}_{-9}$	$H_0$	68.42	$71.7 \pm 1.8$	$z_{\text{eq}}$	3348	$3241 \pm 67$
$A_{143}^{\text{tSZ}}$	8.45	—	$10^9 A_s$	2.244	$3.08 \pm 0.34$	$100\theta_{\text{eq}}$	0.8238	$0.848 \pm 0.015$
$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.850$	$\Omega_m h^2$	0.14074	$0.1363 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.0745 \pm 0.0013$

Best-fit  $\chi^2_{\text{eff}} = 7795.58$ ; R-1 = 0.01149

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.39 CamSpec: 7799.18 Hubble - HST: 5.03

### 13.17 base\_nrun\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02226	$0.02333^{+0.00056}_{-0.00067}$	$r_{143 \times 217}^{\text{CIB}}$	0.600	$0.41^{+0.22}_{-0.27}$	$\Omega_m h^3$	0.09619	$0.09757^{+0.00086}_{-0.0010}$
$\Omega_c h^2$	0.11876	$0.1129 \pm 0.0036$	$\gamma^{\text{CIB}}$	0.514	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247793	$0.24824^{+0.00023}_{-0.00027}$
$100\theta_{\text{MC}}$	1.04150	$1.04255 \pm 0.00080$	$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8348	$1.819 \pm 0.015$
$\tau$	0.096	$0.249 \pm 0.064$	$c_{217}$	0.99635	$0.9964 \pm 0.0014$	Age/Gyr	13.786	$13.62^{+0.11}_{-0.087}$
$n_s$	0.9606	$0.983 \pm 0.014$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.05	$1088.28 \pm 0.95$
$dn_s/d \ln k$	-0.0103	$-0.042^{+0.020}_{-0.016}$	$A^{\text{kSZ}}$	1.31	$< 5.98$	$r_*$	144.83	$145.54 \pm 0.66$
$\ln(10^{10} A_s)$	3.102	$3.40 \pm 0.12$	$\beta_1^1$	0.60	$0.50 \pm 0.57$	$100\theta_*$	1.04164	$1.04258 \pm 0.00076$
$A_{100}^{\text{PS}}$	150	$163 \pm 60$	$\Omega_\Lambda$	0.6927	$0.730 \pm 0.021$	$z_{\text{drag}}$	1059.67	$1061.7^{+1.1}_{-1.3}$
$A_{143}^{\text{PS}}$	42.1	$51 \pm 10$	$\Omega_m$	0.3073	$0.270 \pm 0.021$	$r_{\text{drag}}$	147.53	$147.92 \pm 0.60$
$A_{217}^{\text{PS}}$	106.1	$105^{+20}_{-20}$	$\sigma_8$	0.8277	$0.931^{+0.048}_{-0.042}$	$k_D$	0.14021	$0.14055 \pm 0.00067$
$A_{143}^{\text{CIB}}$	8.86	$< 10.5$	$z_{\text{re}}$	11.59	$21^{+4}_{-3}$	$100\theta_D$	0.16115	$0.16012 \pm 0.00057$
$A_{217}^{\text{CIB}}$	32.6	$29^{+6}_{-9}$	$H_0$	67.90	$71.3^{+1.9}_{-2.2}$	$z_{\text{eq}}$	3370	$3256 \pm 76$
$A_{143}^{\text{tSZ}}$	9.87	—	$10^9 A_s$	2.225	$3.02^{+0.35}_{-0.41}$	$100\theta_{\text{eq}}$	0.8193	$0.845 \pm 0.017$
$r_{143 \times 217}^{\text{PS}}$	0.884	$> 0.850$	$\Omega_m h^2$	0.14167	$0.1369 \pm 0.0032$	$r_{\text{drag}}/D_V(0.57)$	0.07186	$0.0742^{+0.0014}_{-0.0016}$

Best-fit  $\chi^2_{\text{eff}} = 8219.32$ ; R-1 = 0.00968

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.14 CamSpec: 7798.44 SN - SNLS: 429.15



### 13.18 base\_nrun\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02219	$0.02302^{+0.00052}_{-0.00065}$	$r_{143 \times 217}^{\text{CIB}}$	0.601	$0.43 \pm 0.23$	$\Omega_m h^3$	0.09616	$0.09725 \pm 0.00089$
$\Omega_c h^2$	0.11973	$0.1152 \pm 0.0037$	$\gamma^{\text{CIB}}$	0.515	$0.53 \pm 0.13$	$Y_P$	0.247761	$0.24811^{+0.00022}_{-0.00026}$
$100\theta_{\text{MC}}$	1.04137	$1.04217 \pm 0.00080$	$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8389	$1.828 \pm 0.016$
$\tau$	0.095	$0.216 \pm 0.065$	$c_{217}$	0.99637	$0.9964 \pm 0.0014$	Age/Gyr	13.801	$13.67^{+0.10}_{-0.085}$
$n_s$	0.9585	$0.975^{+0.013}_{-0.015}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.23	$1088.8^{+1.0}_{-0.93}$
$dn_s/d \ln k$	-0.0098	$-0.035^{+0.019}_{-0.015}$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.63	$145.18 \pm 0.68$
$\ln(10^{10} A_s)$	3.101	$3.34 \pm 0.13$	$\beta_1^1$	0.62	$0.54 \pm 0.57$	$100\theta_*$	1.04152	$1.04224 \pm 0.00077$
$A_{100}^{\text{PS}}$	152	$168 \pm 60$	$\Omega_\Lambda$	0.6867	$0.716 \pm 0.023$	$z_{\text{drag}}$	1059.55	$1061.1^{+1.0}_{-1.2}$
$A_{143}^{\text{PS}}$	42.3	$52 \pm 10$	$\Omega_m$	0.3133	$0.284 \pm 0.023$	$r_{\text{drag}}$	147.36	$147.65 \pm 0.63$
$A_{217}^{\text{PS}}$	107.5	$105^{+20}_{-20}$	$\sigma_8$	0.8303	$0.913 \pm 0.044$	$k_D$	0.14034	$0.14063 \pm 0.00068$
$A_{143}^{\text{CIB}}$	9.12	$< 10.8$	$z_{\text{re}}$	11.49	$19.5^{+4.5}_{-3.2}$	$100\theta_D$	0.16120	$0.16038 \pm 0.00057$
$A_{217}^{\text{CIB}}$	32.6	$29^{+6}_{-9}$	$H_0$	67.45	$70.1^{+1.9}_{-2.2}$	$z_{\text{eq}}$	3391	$3303 \pm 79$
$A_{143}^{\text{tSZ}}$	9.97	—	$10^9 A_s$	2.222	$2.84^{+0.33}_{-0.40}$	$100\theta_{\text{eq}}$	0.8151	$0.835^{+0.016}_{-0.018}$
$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.849$	$\Omega_m h^2$	0.14256	$0.1389 \pm 0.0033$	$r_{\text{drag}}/D_V(0.57)$	0.07152	$0.0733^{+0.0013}_{-0.0016}$

Best-fit  $\chi^2_{\text{eff}} = 7920.35$ ; R-1 = 0.00756

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.91 CamSpec: 7797.89 SN - Union2.1: 130.51

### 13.19 base\_nrun\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02266	$0.02243^{+0.00059}_{-0.00078}$	$\sigma_8$	0.8149	$0.814 \pm 0.027$	$r_*$	145.59	$145.4 \pm 1.5$
$\Omega_c h^2$	0.1147	$0.1161 \pm 0.0069$	$z_{\text{re}}$	10.85	$10.9 \pm 1.3$	$100\theta_*$	1.04066	$1.0402 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04056	$1.0401 \pm 0.0023$	$H_0$	69.39	$68.6^{+2.9}_{-3.7}$	$z_{\text{drag}}$	1060.28	$1059.9^{+1.2}_{-1.4}$
$\tau$	0.0904	$0.090^{+0.013}_{-0.016}$	$10^9 A_s$	2.220	$2.222^{+0.075}_{-0.086}$	$r_{\text{drag}}$	148.19	$148.1 \pm 1.5$
$n_s$	0.9726	$0.960^{+0.028}_{-0.040}$	$\Omega_m h^2$	0.1380	$0.1392 \pm 0.0065$	$k_D$	0.13982	$0.1398 \pm 0.0015$
$dn_s/d \ln k$	-0.0015	$-0.011^{+0.020}_{-0.027}$	$\Omega_m h^3$	0.09574	$0.0953 \pm 0.0018$	$100\theta_D$	0.16060	$0.16083 \pm 0.00065$
$\ln(10^{10} A_s)$	3.1000	$3.100 \pm 0.036$	$Y_P$	0.247962	$0.24786^{+0.00026}_{-0.00032}$	$z_{\text{eq}}$	3281	$3311 \pm 160$
$A_{\text{tSZ}}$	0.76	—	$10^9 A_s e^{-2\tau}$	1.8525	$1.855 \pm 0.039$	$100\theta_{\text{eq}}$	0.8361	$0.831^{+0.028}_{-0.035}$
$\Omega_\Lambda$	0.7135	$0.701^{+0.044}_{-0.040}$	Age/Gyr	13.755	$13.79^{+0.15}_{-0.13}$	$r_{\text{drag}}/D_V(0.57)$	0.07298	$0.0725^{+0.0021}_{-0.0029}$
$\Omega_m$	0.2865	$0.299^{+0.040}_{-0.044}$	$z_*$	1089.20	$1089.6^{+1.5}_{-1.3}$			

Best-fit  $\chi^2_{\text{eff}} = 7557.91$ ; R-1 = 0.01179

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.91

### 13.20 base\_nrun\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022399	$0.02233 \pm 0.00047$	$\sigma_8$	0.8180	$0.816 \pm 0.019$	$r_*$	145.31	$145.29 \pm 0.80$
$\Omega_c h^2$	0.11651	$0.1168 \pm 0.0027$	$z_{\text{re}}$	10.70	$11.0^{+1.2}_{-1.3}$	$100\theta_*$	1.03998	$1.0401 \pm 0.0020$
$100\theta_{\text{MC}}$	1.03985	$1.0400 \pm 0.0021$	$H_0$	68.27	$68.2 \pm 1.0$	$z_{\text{drag}}$	1059.82	$1059.7 \pm 1.1$
$\tau$	0.0873	$0.090^{+0.013}_{-0.016}$	$10^9 A_s$	2.217	$2.225^{+0.065}_{-0.080}$	$r_{\text{drag}}$	147.98	$147.99 \pm 0.90$
$n_s$	0.9637	$0.954 \pm 0.020$	$\Omega_m h^2$	0.13956	$0.1398 \pm 0.0027$	$k_D$	0.13985	$0.1398 \pm 0.0012$
$dn_s/d \ln k$	-0.0063	$-0.014 \pm 0.016$	$\Omega_m h^3$	0.09527	$0.0953 \pm 0.0017$	$100\theta_D$	0.16078	$0.16090 \pm 0.00059$
$\ln(10^{10} A_s)$	3.0988	$3.102^{+0.030}_{-0.035}$	$Y_P$	0.247852	$0.24782 \pm 0.00020$	$z_{\text{eq}}$	3319	$3325 \pm 65$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8621	$1.857 \pm 0.023$	$100\theta_{\text{eq}}$	0.8277	$0.827 \pm 0.011$
$\Omega_\Lambda$	0.7006	$0.699^{+0.014}_{-0.012}$	Age/Gyr	13.810	$13.815 \pm 0.088$	$r_{\text{drag}}/D_V(0.57)$	0.07218	$0.07212 \pm 0.00074$
$\Omega_m$	0.2994	$0.301^{+0.012}_{-0.014}$	$z_*$	1089.68	$1089.81 \pm 0.63$			

Best-fit  $\chi^2_{\text{eff}} = 7558.83$ ; R-1 = 0.02100

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.04 DR7: 0.47 DR9: 0.72 CMB - WMAP: 7557.60

### 13.21 base\_nrun\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02288	$0.02304 \pm 0.00056$	$\sigma_8$	0.8012	$0.793 \pm 0.023$	$r_*$	146.45	$146.8 \pm 1.1$
$\Omega_c h^2$	0.11082	$0.1092 \pm 0.0045$	$z_{\text{re}}$	11.23	$10.6 \pm 1.2$	$100\theta_*$	1.04106	$1.0413 \pm 0.0021$
$100\theta_{\text{MC}}$	1.04097	$1.0412 \pm 0.0021$	$H_0$	71.18	$72.1 \pm 2.1$	$z_{\text{drag}}$	1060.54	$1060.8 \pm 1.2$
$\tau$	0.0969	$0.091 \pm 0.014$	$10^9 A_s$	2.220	$2.187^{+0.067}_{-0.080}$	$r_{\text{drag}}$	148.99	$149.3 \pm 1.2$
$n_s$	0.9787	$0.991 \pm 0.026$	$\Omega_m h^2$	0.13434	$0.1329 \pm 0.0043$	$k_D$	0.13914	$0.1389 \pm 0.0013$
$dn_s/d \ln k$	-0.0015	$0.008 \pm 0.020$	$\Omega_m h^3$	0.09563	$0.0957 \pm 0.0018$	$100\theta_D$	0.16050	$0.16042 \pm 0.00058$
$\ln(10^{10} A_s)$	3.1000	$3.084^{+0.032}_{-0.036}$	$Y_P$	0.248056	$0.24812 \pm 0.00023$	$z_{\text{eq}}$	3195	$3159 \pm 100$
$A_{\text{tSZ}}$	1.35	—	$10^9 A_s e^{-2\tau}$	1.8287	$1.823 \pm 0.029$	$100\theta_{\text{eq}}$	0.8541	$0.863 \pm 0.021$
$\Omega_\Lambda$	0.7348	$0.743^{+0.025}_{-0.020}$	Age/Gyr	13.699	$13.66 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07441	$0.0751 \pm 0.0016$
$\Omega_m$	0.2652	$0.257^{+0.020}_{-0.025}$	$z_*$	1088.59	$1088.27 \pm 0.87$			

Best-fit  $\chi^2_{\text{eff}} = 7559.95$ ; R-1 = 0.02574

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.69 Hubble - HST: 1.26

### 13.22 base\_nrun\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02279	$0.02290^{+0.00062}_{-0.00070}$	$\sigma_8$	0.8042	$0.795 \pm 0.024$	$r_*$	146.27	$146.6 \pm 1.2$
$\Omega_c h^2$	0.1117	$0.1102 \pm 0.0053$	$z_{\text{re}}$	11.07	$10.7 \pm 1.2$	$100\theta_*$	1.04083	$1.0409 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04073	$1.0408 \pm 0.0023$	$H_0$	70.67	$71.5^{+2.5}_{-2.8}$	$z_{\text{drag}}$	1060.39	$1060.5 \pm 1.3$
$\tau$	0.0944	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.217	$2.189^{+0.068}_{-0.082}$	$r_{\text{drag}}$	148.84	$149.2 \pm 1.2$
$n_s$	0.9774	$0.985^{+0.029}_{-0.032}$	$\Omega_m h^2$	0.13517	$0.1337 \pm 0.0049$	$k_D$	0.13924	$0.1389 \pm 0.0013$
$dn_s/d \ln k$	-0.0016	$0.005 \pm 0.021$	$\Omega_m h^3$	0.09553	$0.0954 \pm 0.0018$	$100\theta_D$	0.16055	$0.16052 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0988	$3.086^{+0.032}_{-0.036}$	$Y_P$	0.248019	$0.24806 \pm 0.00027$	$z_{\text{eq}}$	3215	$3179 \pm 120$
$A_{\text{tSZ}}$	0.90	—	$10^9 A_s e^{-2\tau}$	1.8356	$1.826 \pm 0.031$	$100\theta_{\text{eq}}$	0.8497	$0.858^{+0.024}_{-0.027}$
$\Omega_\Lambda$	0.7294	$0.737^{+0.031}_{-0.026}$	Age/Gyr	13.720	$13.70^{+0.14}_{-0.12}$	$r_{\text{drag}}/D_V(0.57)$	0.07402	$0.0747^{+0.0019}_{-0.0022}$
$\Omega_m$	0.2706	$0.263^{+0.026}_{-0.031}$	$z_*$	1088.78	$1088.5 \pm 1.1$			

Best-fit  $\chi^2_{\text{eff}} = 7984.85$ ; R-1 = 0.02186

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.30 SN - SNLS: 426.55

### 13.23 base\_nrun\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02265	$0.02254^{+0.00058}_{-0.00068}$	$\sigma_8$	0.8122	$0.809 \pm 0.024$	$r_*$	145.78	$145.7 \pm 1.3$
$\Omega_c h^2$	0.1140	$0.1145 \pm 0.0055$	$z_{\text{re}}$	10.91	$10.8^{+1.2}_{-1.3}$	$100\theta_*$	1.04054	$1.0404 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04044	$1.0403 \pm 0.0022$	$H_0$	69.60	$69.3^{+2.4}_{-2.9}$	$z_{\text{drag}}$	1060.24	$1060.0 \pm 1.3$
$\tau$	0.0913	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.219	$2.214^{+0.070}_{-0.083}$	$r_{\text{drag}}$	148.37	$148.4 \pm 1.3$
$n_s$	0.9731	$0.965^{+0.028}_{-0.032}$	$\Omega_m h^2$	0.1373	$0.1377 \pm 0.0052$	$k_D$	0.13963	$0.1395 \pm 0.0014$
$dn_s/d \ln k$	-0.0019	$-0.007 \pm 0.021$	$\Omega_m h^3$	0.09556	$0.0954 \pm 0.0018$	$100\theta_D$	0.16060	$0.16076 \pm 0.00063$
$\ln(10^{10} A_s)$	3.0996	$3.097^{+0.033}_{-0.037}$	$Y_P$	0.247960	$0.24791^{+0.00025}_{-0.00028}$	$z_{\text{eq}}$	3265	$3275 \pm 130$
$A_{\text{tSZ}}$	0.70	—	$10^9 A_s e^{-2\tau}$	1.8485	$1.847 \pm 0.033$	$100\theta_{\text{eq}}$	0.8391	$0.838^{+0.024}_{-0.027}$
$\Omega_\Lambda$	0.7165	$0.712^{+0.034}_{-0.030}$	Age/Gyr	13.755	$13.77 \pm 0.12$	$r_{\text{drag}}/D_V(0.57)$	0.07316	$0.0730^{+0.0018}_{-0.0022}$
$\Omega_m$	0.2835	$0.288^{+0.030}_{-0.034}$	$z_*$	1089.14	$1089.4 \pm 1.1$			

Best-fit  $\chi^2_{\text{eff}} = 7687.79$ ; R-1 = 0.01467

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.88 SN - Union2.1: 129.91

## 14 nrun+r

### 14.1 base\_nrun\_r\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022150	$0.02231 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.322	$0.49^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09611	$0.09642 \pm 0.00064$
$\Omega_c h^2$	0.11993	$0.1198 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.533	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247746	$0.24781 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04133	$1.04141 \pm 0.00063$	$c_{100}$	1.000588	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8409	$1.844 \pm 0.014$
$\tau$	0.0938	$0.100^{+0.014}_{-0.017}$	$c_{217}$	0.99638	$0.9965 \pm 0.0014$	Age/Gyr	13.806	$13.787 \pm 0.052$
$n_s$	0.9604	$0.9583 \pm 0.0081$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.611$	$z_*$	1090.30	$1090.09 \pm 0.57$
$dn_s/d \ln k$	-0.0075	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	3.25	—	$r_*$	144.61	$144.52 \pm 0.62$
$\ln(10^{10} A_s)$	3.1004	$3.114^{+0.029}_{-0.034}$	$\beta_1^1$	0.71	$0.66 \pm 0.57$	$100\theta_*$	1.04148	$1.04154 \pm 0.00062$
$r_{0.05}$	0.000	$< 0.127$	$\Omega_\Lambda$	0.6853	$0.687^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.51	$1059.86 \pm 0.66$
$A_{100}^{\text{PS}}$	146	$186 \pm 60$	$\Omega_m$	0.3147	$0.313^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.35	$147.21 \pm 0.62$
$A_{143}^{\text{PS}}$	53.4	$56 \pm 10$	$\sigma_8$	0.8318	$0.833 \pm 0.014$	$k_D$	0.14032	$0.14059 \pm 0.00069$
$A_{217}^{\text{PS}}$	115.3	$103^{+20}_{-20}$	$z_{\text{re}}$	11.43	$11.9 \pm 1.3$	$100\theta_D$	0.161241	$0.16104 \pm 0.00038$
$A_{143}^{\text{CIB}}$	3.08	—	$H_0$	67.34	$67.6 \pm 1.2$	$z_{\text{eq}}$	3395	$3396 \pm 62$
$A_{217}^{\text{CIB}}$	26.5	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.132$	$100\theta_{\text{eq}}$	0.8143	$0.815 \pm 0.012$
$A_{143}^{\text{tSZ}}$	7.54	—	$10^9 A_s$	2.221	$2.253^{+0.063}_{-0.079}$	$r_{\text{drag}}/D_V(0.57)$	0.07145	$0.07154 \pm 0.00093$
$r_{143 \times 217}^{\text{PS}}$	0.887	$> 0.838$	$\Omega_m h^2$	0.14272	$0.1428 \pm 0.0026$			

Best-fit  $\chi_{\text{eff}}^2 = 9804.37$ ; R-1 = 0.01009

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.45 lowl: -8.64 CamSpec: 7797.86

## 14.2 base\_nrun\_r\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022300	$0.02243 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.507	$0.49^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.09615	$0.09639 \pm 0.00063$
$\Omega_c h^2$	0.11802	$0.1179 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.557	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247810	$0.24787 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04152	$1.04159 \pm 0.00062$	$c_{100}$	1.000584	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8337	$1.834 \pm 0.011$
$\tau$	0.0953	$0.097^{+0.014}_{-0.016}$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	Age/Gyr	13.7774	$13.761 \pm 0.050$
$n_s$	0.9674	$0.9633 \pm 0.0072$	$\xi^{\text{tSZ-CIB}}$	0.332	$< 0.616$	$z_*$	1089.94	$1089.76 \pm 0.53$
$dn_s/d \ln k$	-0.0034	$-0.017^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	0.98	—	$r_*$	144.988	$144.93 \pm 0.49$
$\ln(10^{10} A_s)$	3.0996	$3.102 \pm 0.027$	$\beta_1^1$	0.67	$0.57 \pm 0.57$	$100\theta_*$	1.04166	$1.04171 \pm 0.00061$
$r_{0.05}$	0.000	$< 0.131$	$\Omega_\Lambda$	0.6970	$0.698 \pm 0.014$	$z_{\text{drag}}$	1059.70	$1060.00 \pm 0.66$
$A_{100}^{\text{PS}}$	164	$180 \pm 60$	$\Omega_m$	0.3030	$0.302 \pm 0.014$	$r_{\text{drag}}$	147.688	$147.58 \pm 0.50$
$A_{143}^{\text{PS}}$	65.9	$53 \pm 10$	$\sigma_8$	0.8281	$0.823 \pm 0.010$	$k_D$	0.14009	$0.14029 \pm 0.00059$
$A_{217}^{\text{PS}}$	119.0	$101^{+20}_{-20}$	$z_{\text{re}}$	11.47	$11.5 \pm 1.1$	$100\theta_D$	0.161120	$0.16096 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	68.21	$68.4 \pm 1.1$	$z_{\text{eq}}$	3352.9	$3352 \pm 49$
$A_{217}^{\text{CIB}}$	25.0	$31^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.136$	$100\theta_{\text{eq}}$	0.8225	$0.8231 \pm 0.0096$
$A_{143}^{\text{tSZ}}$	4.98	—	$10^9 A_s$	2.219	$2.226^{+0.057}_{-0.066}$	$r_{\text{drag}}/D_V(0.57)$	0.07210	$0.07219 \pm 0.00079$
$r_{143 \times 217}^{\text{PS}}$	0.924	$> 0.832$	$\Omega_m h^2$	0.14096	$0.1409 \pm 0.0021$			

Best-fit  $\chi_{\text{eff}}^2 = 9815.60$ ; R-1 = 0.01473

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.42 lensing: 9.84 lowl: -8.46 CamSpec: 7799.29



### 14.3 base\_nrun\_r\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022247	$0.02238 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.379	$0.49^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09622	$0.09644 \pm 0.00064$
$\Omega_c h^2$	0.11909	$0.1188 \pm 0.0017$	$\gamma^{\text{CIB}}$	0.527	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247787	$0.24784 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04148	$1.04154 \pm 0.00056$	$c_{100}$	1.000594	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8368	$1.839 \pm 0.011$
$\tau$	0.0950	$0.102^{+0.014}_{-0.017}$	$c_{217}$	0.99632	$0.9965 \pm 0.0014$	Age/Gyr	13.7886	$13.772 \pm 0.040$
$n_s$	0.9595	$0.9607 \pm 0.0063$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.613$	$z_*$	1090.096	$1089.91 \pm 0.43$
$dn_s/d \ln k$	-0.0109	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	7.86	—	$r_*$	144.749	$144.73 \pm 0.44$
$\ln(10^{10} A_s)$	3.1007	$3.115^{+0.030}_{-0.034}$	$\beta_1^1$	0.67	$0.64 \pm 0.57$	$100\theta_*$	1.04162	$1.04167 \pm 0.00056$
$r_{0.05}$	0.000	$< 0.134$	$\Omega_\Lambda$	0.6908	$0.693^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1059.67	$1059.94 \pm 0.63$
$A_{100}^{\text{PS}}$	135	$184 \pm 60$	$\Omega_m$	0.3092	$0.307 \pm 0.010$	$r_{\text{drag}}$	147.459	$147.40 \pm 0.48$
$A_{143}^{\text{PS}}$	43.3	$56 \pm 10$	$\sigma_8$	0.8278	$0.831 \pm 0.013$	$k_D$	0.14028	$0.14045 \pm 0.00062$
$A_{217}^{\text{PS}}$	107.2	$103^{+20}_{-20}$	$z_{\text{re}}$	11.49	$12.0 \pm 1.2$	$100\theta_D$	0.161154	$0.16100 \pm 0.00037$
$A_{143}^{\text{CIB}}$	3.60	—	$H_0$	67.77	$68.01 \pm 0.80$	$z_{\text{eq}}$	3377.4	$3373 \pm 40$
$A_{217}^{\text{CIB}}$	26.9	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.140$	$100\theta_{\text{eq}}$	0.8179	$0.8191 \pm 0.0075$
$A^{\text{tSZ}}_{143}$	8.19	—	$10^9 A_s$	2.221	$2.255^{+0.065}_{-0.079}$	$r_{\text{drag}}/D_V(0.57)$	0.07175	$0.07188 \pm 0.00059$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.837$	$\Omega_m h^2$	0.14199	$0.1418 \pm 0.0017$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.96$ ; R-1 = 0.01090

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.23 DR7: 1.26 6DF: 0.01 CMB - lowLike: 2014.43 lowl: -9.17 CamSpec: 7798.44

#### 14.4 base\_nrun\_r\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022317	$0.02255 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.430	$0.50^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09624	$0.09657 \pm 0.00064$
$\Omega_c h^2$	0.11822	$0.1171 \pm 0.0024$	$\gamma^{\text{CIB}}$	0.523	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247817	$0.24791 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04157	$1.04183 \pm 0.00061$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8333	$1.832 \pm 0.013$
$\tau$	0.0961	$0.106^{+0.015}_{-0.018}$	$c_{217}$	0.99633	$0.9965 \pm 0.0014$	Age/Gyr	13.7749	$13.739 \pm 0.049$
$n_s$	0.9619	$0.9650 \pm 0.0076$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.610$	$z_*$	1089.93	$1089.55 \pm 0.52$
$dn_s/d \ln k$	-0.0104	$-0.022^{+0.013}_{-0.011}$	$A^{\text{kSZ}}$	6.14	—	$r_*$	144.92	$145.05 \pm 0.57$
$\ln(10^{10} A_s)$	3.1010	$3.120^{+0.031}_{-0.036}$	$\beta_1^1$	0.66	$0.59 \pm 0.58$	$100\theta_*$	1.04172	$1.04194 \pm 0.00060$
$r_{0.05}$	0.004	$< 0.157$	$\Omega_\Lambda$	0.6962	$0.704 \pm 0.014$	$z_{\text{drag}}$	1059.78	$1060.21 \pm 0.66$
$A_{100}^{\text{PS}}$	135	$182 \pm 60$	$\Omega_m$	0.3038	$0.296 \pm 0.014$	$r_{\text{drag}}$	147.61	$147.67 \pm 0.58$
$A_{143}^{\text{PS}}$	44.1	$54 \pm 10$	$\sigma_8$	0.8255	$0.827 \pm 0.014$	$k_D$	0.14017	$0.14029 \pm 0.00067$
$A_{217}^{\text{PS}}$	108.3	$102^{+20}_{-20}$	$z_{\text{re}}$	11.53	$12.2 \pm 1.3$	$100\theta_D$	0.161101	$0.16087 \pm 0.00037$
$A_{143}^{\text{CIB}}$	3.94	—	$H_0$	68.17	$68.9 \pm 1.1$	$z_{\text{eq}}$	3358	$3336 \pm 55$
$A_{217}^{\text{CIB}}$	27.5	$32^{+7}_{-10}$	$r_{0.002}$	0.004	$< 0.169$	$100\theta_{\text{eq}}$	0.8216	$0.827 \pm 0.011$
$A_{143}^{\text{tSZ}}$	8.65	—	$10^9 A_s$	2.222	$2.266^{+0.067}_{-0.083}$	$r_{\text{drag}}/D_V(0.57)$	0.07205	$0.07252 \pm 0.00087$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.833$	$\Omega_m h^2$	0.14118	$0.1403 \pm 0.0023$			

Best-fit  $\chi_{\text{eff}}^2 = 9810.45$ ; R-1 = 0.01512

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.39 lowl: -9.21 CamSpec: 7799.00 Hubble - HST: 5.49

## 14.5 base\_nrun\_r\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022262	$0.02245 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.361	$0.49^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.09621	$0.09646 \pm 0.00064$
$\Omega_c h^2$	0.11884	$0.1180 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.528	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247794	$0.24787 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04149	$1.04166 \pm 0.00062$	$c_{100}$	1.000594	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8357	$1.836 \pm 0.013$
$\tau$	0.0953	$0.103^{+0.015}_{-0.018}$	$c_{217}$	0.99632	$0.9965 \pm 0.0014$	Age/Gyr	13.7857	$13.758 \pm 0.050$
$n_s$	0.9600	$0.9627 \pm 0.0077$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.612$	$z_*$	1090.06	$1089.75 \pm 0.54$
$dn_s/d \ln k$	-0.0111	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	8.02	—	$r_*$	144.80	$144.89 \pm 0.57$
$\ln(10^{10} A_s)$	3.1006	$3.117^{+0.030}_{-0.035}$	$\beta_1^1$	0.67	$0.61 \pm 0.58$	$100\theta_*$	1.04163	$1.04178 \pm 0.00061$
$r_{0.05}$	0.000	$< 0.144$	$\Omega_\Lambda$	0.6923	$0.698 \pm 0.015$	$z_{\text{drag}}$	1059.67	$1060.04 \pm 0.66$
$A_{100}^{\text{PS}}$	135	$183 \pm 60$	$\Omega_m$	0.3077	$0.302 \pm 0.015$	$r_{\text{drag}}$	147.51	$147.54 \pm 0.58$
$A_{143}^{\text{PS}}$	43.6	$55 \pm 10$	$\sigma_8$	0.8270	$0.829 \pm 0.014$	$k_D$	0.14024	$0.14035 \pm 0.00067$
$A_{217}^{\text{PS}}$	107.4	$103^{+20}_{-20}$	$z_{\text{re}}$	11.50	$12.1 \pm 1.3$	$100\theta_D$	0.161143	$0.16095 \pm 0.00038$
$A_{143}^{\text{CIB}}$	3.40	—	$H_0$	67.87	$68.4 \pm 1.2$	$z_{\text{eq}}$	3372	$3355 \pm 57$
$A_{217}^{\text{CIB}}$	26.6	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.153$	$100\theta_{\text{eq}}$	0.8190	$0.823 \pm 0.011$
$A_{143}^{\text{tSZ}}$	8.06	—	$10^9 A_s$	2.221	$2.259^{+0.066}_{-0.081}$	$r_{\text{drag}}/D_V(0.57)$	0.07184	$0.07218 \pm 0.00088$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.835$	$\Omega_m h^2$	0.14174	$0.1411 \pm 0.0024$			

Best-fit  $\chi_{\text{eff}}^2 = 10233.76$ ; R-1 = 0.01103

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.43 lowl: -9.23 CamSpec: 7798.64 SN - SNLS: 429.19

## 14.6 base\_nrun\_r\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022174	$0.02236 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.364	$0.49^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.09614	$0.09643 \pm 0.00064$
$\Omega_c h^2$	0.11985	$0.1192 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.530	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247756	$0.24783 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04133	$1.04150 \pm 0.00062$	$c_{100}$	1.000591	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8397	$1.841 \pm 0.014$
$\tau$	0.0940	$0.101^{+0.015}_{-0.017}$	$c_{217}$	0.99633	$0.9965 \pm 0.0014$	Age/Gyr	13.8037	$13.777 \pm 0.050$
$n_s$	0.9579	$0.9599 \pm 0.0078$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.612$	$z_*$	1090.26	$1089.97 \pm 0.55$
$dn_s/d \ln k$	-0.0103	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	7.52	—	$r_*$	144.61	$144.65 \pm 0.59$
$\ln(10^{10} A_s)$	3.1002	$3.115^{+0.029}_{-0.034}$	$\beta_1^1$	0.68	$0.64 \pm 0.57$	$100\theta_*$	1.04148	$1.04162 \pm 0.00061$
$r_{0.05}$	0.000	$< 0.133$	$\Omega_\Lambda$	0.6859	$0.691^{+0.017}_{-0.015}$	$z_{\text{drag}}$	1059.55	$1059.92 \pm 0.66$
$A_{100}^{\text{PS}}$	138	$184 \pm 60$	$\Omega_m$	0.3141	$0.309^{+0.015}_{-0.017}$	$r_{\text{drag}}$	147.34	$147.32 \pm 0.59$
$A_{143}^{\text{PS}}$	44.7	$56 \pm 10$	$\sigma_8$	0.8300	$0.832 \pm 0.014$	$k_D$	0.14035	$0.14051 \pm 0.00067$
$A_{217}^{\text{PS}}$	108.1	$103^{+20}_{-20}$	$z_{\text{re}}$	11.44	$11.9 \pm 1.3$	$100\theta_D$	0.161211	$0.16101 \pm 0.00038$
$A_{143}^{\text{CIB}}$	3.67	—	$H_0$	67.39	$67.9 \pm 1.2$	$z_{\text{eq}}$	3394	$3382 \pm 58$
$A_{217}^{\text{CIB}}$	26.9	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.138$	$100\theta_{\text{eq}}$	0.8146	$0.818 \pm 0.011$
$A_{143}^{\text{tSZ}}$	7.93	—	$10^9 A_s$	2.220	$2.255^{+0.064}_{-0.079}$	$r_{\text{drag}}/D_V(0.57)$	0.07148	$0.07177 \pm 0.00089$
$r_{143 \times 217}^{\text{PS}}$	0.885	$> 0.837$	$\Omega_m h^2$	0.14267	$0.1422 \pm 0.0024$			

Best-fit  $\chi_{\text{eff}}^2 = 9934.76$ ; R-1 = 0.00974

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.44 lowl: -8.95 CamSpec: 7798.00 SN - Union2.1: 130.53

## 14.7 base\_nrun\_r\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022231	$0.02238 \pm 0.00031$	$\beta_1^1$	0.52	$0.55 \pm 0.56$	$z_{\text{re}}$	11.36	$12.1 \pm 1.3$
$\Omega_c h^2$	0.12039	$0.1198 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.51	$10.50 \pm 0.59$	$H_0$	67.24	$67.6 \pm 1.2$
$100\theta_{\text{MC}}$	1.04133	$1.04143 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.75	$76.6 \pm 4.5$	$r_{0.002}$	0.000	$< 0.123$
$\tau$	0.0932	$0.103^{+0.015}_{-0.018}$	$A_{95}^{\text{PS, SPT}}$	7.30	$7.56^{+1.3}_{-1.6}$	$10^9 A_s$	2.220	$2.267^{+0.064}_{-0.081}$
$n_s$	0.9546	$0.9570 \pm 0.0075$	$A_{150}^{\text{PS, SPT}}$	9.986	$9.996 \pm 0.51$	$\Omega_m h^2$	0.14327	$0.1429 \pm 0.0026$
$dn_s/d \ln k$	-0.0145	$-0.0221^{+0.011}_{-0.0099}$	$A_{220}^{\text{PS, SPT}}$	73.99	$74.2 \pm 4.4$	$\Omega_m h^3$	0.09634	$0.09655 \pm 0.00063$
$\ln(10^{10} A_s)$	3.1003	$3.120^{+0.029}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.813	$0.833 \pm 0.090$	$Y_p$	0.247780	$0.24784 \pm 0.00013$
$r_{0.05}$	0.000	$< 0.119$	$r_{95 \times 220}^{\text{PS}}$	0.588	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8430	$1.843 \pm 0.014$
$A_{100}^{\text{PS}}$	221	$226 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9217	$0.937 \pm 0.023$	Age/Gyr	13.800	$13.780 \pm 0.051$
$A_{143}^{\text{PS}}$	78.4	$78.3 \pm 8.4$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1090.23	$1090.01 \pm 0.55$
$A_{217}^{\text{PS}}$	64.4	$64 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.85 \pm 0.20$	$r_*$	144.43	$144.46 \pm 0.62$
$A_{143}^{\text{CIB}}$	3.10	$3.22 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9893	$0.9899 \pm 0.0073$	$100\theta_*$	1.04147	$1.04156 \pm 0.00062$
$A_{217}^{\text{CIB}}$	49.7	$49.1 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0018	$1.003 \pm 0.013$	$z_{\text{drag}}$	1059.70	$1060.01 \pm 0.64$
$A_{143}^{\text{tSZ}}$	3.28	$2.32^{+0.95}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9854	$0.9859 \pm 0.0073$	$r_{\text{drag}}$	147.14	$147.13 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.832^{+0.066}_{-0.073}$	$y_{217}^{\text{ACTe}}$	0.9603	$0.962 \pm 0.010$	$k_D$	0.14061	$0.14073 \pm 0.00069$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{95}^{\text{SPT}}$	0.9786	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.161113	$0.16095 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.624	$0.628 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9823	$0.9841 \pm 0.0096$	$z_{\text{eq}}$	3408	$3398 \pm 62$
$c_{100}$	1.000587	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0172	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8122	$0.815 \pm 0.012$
$c_{217}$	0.99738	$0.9974 \pm 0.0014$	$\Omega_\Lambda$	0.6832	$0.687^{+0.018}_{-0.016}$	$r_{\text{drag}}/D_V(0.57)$	0.07132	$0.07155 \pm 0.00093$
$\xi^{\text{tSZ-CIB}}$	0.185	$< 0.472$	$\Omega_m$	0.3168	$0.313^{+0.016}_{-0.018}$			
$A^{\text{kSZ}}$	4.39	$5.74^{+2.7}_{-1.7}$	$\sigma_8$	0.8298	$0.835 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.20$ ; R-1 = 0.00627

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.43 lowl: -9.34 CamSpec: 7808.09 highL: 692.80

## 14.8 base\_nrun\_r\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022297	$0.02248 \pm 0.00031$	$\beta_1^1$	0.46	$0.48 \pm 0.55$	$z_{\text{re}}$	11.53	$11.7 \pm 1.1$
$\Omega_c h^2$	0.11851	$0.1179 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.66 \pm 0.60$	$H_0$	68.02	$68.4 \pm 1.1$
$100\theta_{\text{MC}}$	1.04148	$1.04160 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.28	$76.8 \pm 4.5$	$r_{0.002}$	0.000	$< 0.129$
$\tau$	0.0959	$0.0995^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.71	$7.85^{+1.4}_{-1.7}$	$10^9 A_s$	2.220	$2.239^{+0.056}_{-0.070}$
$n_s$	0.9612	$0.9619 \pm 0.0067$	$A_{150}^{\text{PS, SPT}}$	9.963	$10.19 \pm 0.50$	$\Omega_m h^2$	0.14145	$0.1410 \pm 0.0021$
$dn_s/d \ln k$	-0.0065	$-0.019 \pm 0.010$	$A_{220}^{\text{PS, SPT}}$	73.22	$74.5 \pm 4.4$	$\Omega_m h^3$	0.09621	$0.09649 \pm 0.00062$
$\ln(10^{10} A_s)$	3.1000	$3.108^{+0.026}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.783	$0.832 \pm 0.088$	$Y_p$	0.247808	$0.24789 \pm 0.00013$
$r_{0.05}$	0.000	$< 0.125$	$r_{95 \times 220}^{\text{PS}}$	0.531	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8322	$1.834 \pm 0.011$
$A_{100}^{\text{PS}}$	210	$225 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9091	$0.934 \pm 0.024$	Age/Gyr	13.781	$13.756 \pm 0.049$
$A_{143}^{\text{PS}}$	74.1	$77.0 \pm 8.2$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1089.98	$1089.70 \pm 0.52$
$A_{217}^{\text{PS}}$	60.8	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.842	$0.84 \pm 0.20$	$r_*$	144.863	$144.89 \pm 0.50$
$A_{143}^{\text{CIB}}$	3.10	$3.21 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9912	$0.9907 \pm 0.0073$	$100\theta_*$	1.04162	$1.04171 \pm 0.00060$
$A_{217}^{\text{CIB}}$	52.30	$49.5 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0036	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.74	$1060.11 \pm 0.64$
$A_{143}^{\text{tSZ}}$	4.38	$2.31^{+0.92}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9873	$0.9871 \pm 0.0072$	$r_{\text{drag}}$	147.56	$147.52 \pm 0.51$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.831^{+0.065}_{-0.079}$	$y_{217}^{\text{ACTe}}$	0.9619	$0.963 \pm 0.010$	$k_D$	0.14022	$0.14039 \pm 0.00059$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{95}^{\text{SPT}}$	0.9839	$0.981^{+0.018}_{-0.021}$	$100\theta_D$	0.161103	$0.16090 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.658	$0.635 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9850	$0.9864 \pm 0.0096$	$z_{\text{eq}}$	3365	$3354 \pm 50$
$c_{100}$	1.000604	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0181	$1.024 \pm 0.024$	$100\theta_{\text{eq}}$	0.8203	$0.8229 \pm 0.0098$
$c_{217}$	0.99736	$0.9973 \pm 0.0014$	$\Omega_\Lambda$	0.6942	$0.699 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07194	$0.07219 \pm 0.00080$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.447$	$\Omega_m$	0.3058	$0.301 \pm 0.014$			
$A^{\text{kSZ}}$	1.57	$5.03^{+2.6}_{-1.9}$	$\sigma_8$	0.8274	$0.825 \pm 0.010$			

Best-fit  $\chi_{\text{eff}}^2 = 10515.88$ ; R-1 = 0.02293

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lensing: 9.89 lowl: -8.47 CamSpec: 7808.57 highL: 691.31

## 14.9 base\_nrun\_r\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022293	$0.02244 \pm 0.00028$	$\beta_1^1$	0.51	$0.53 \pm 0.56$	$z_{\text{re}}$	11.44	$12.2 \pm 1.2$
$\Omega_c h^2$	0.11897	$0.1188 \pm 0.0018$	$A_{148}^{\text{PS, ACT}}$	10.45	$10.51 \pm 0.59$	$H_0$	67.84	$68.05 \pm 0.79$
$100\theta_{\text{MC}}$	1.04146	$1.04156 \pm 0.00056$	$A_{218}^{\text{PS, ACT}}$	76.75	$76.7 \pm 4.5$	$r_{0.002}$	0.009	$< 0.131$
$\tau$	0.0947	$0.105^{+0.014}_{-0.017}$	$A_{95}^{\text{PS, SPT}}$	7.40	$7.56^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.270^{+0.065}_{-0.082}$
$n_s$	0.9588	$0.9593 \pm 0.0057$	$A_{150}^{\text{PS, SPT}}$	9.96	$10.01 \pm 0.51$	$\Omega_m h^2$	0.14191	$0.1419 \pm 0.0017$
$dn_s/d \ln k$	-0.0116	$-0.022^{+0.011}_{-0.010}$	$A_{220}^{\text{PS, SPT}}$	73.85	$74.2 \pm 4.4$	$\Omega_m h^3$	0.09627	$0.09656 \pm 0.00064$
$\ln(10^{10} A_s)$	3.0995	$3.122^{+0.030}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.800	$0.833^{+0.11}_{-0.091}$	$Y_{\text{P}}$	0.247807	$0.24787 \pm 0.00012$
$r_{0.05}$	0.0096	$< 0.126$	$r_{95 \times 220}^{\text{PS}}$	0.568	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8358	$1.839 \pm 0.011$
$A_{100}^{\text{PS}}$	216	$225 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9193	$0.937 \pm 0.023$	Age/Gyr	13.7842	$13.766 \pm 0.040$
$A_{143}^{\text{PS}}$	76.0	$77.8 \pm 8.3$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.028	$1089.84 \pm 0.42$
$A_{217}^{\text{PS}}$	62.6	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.746	$144.67 \pm 0.44$
$A_{143}^{\text{CIB}}$	3.05	$3.22 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9904	$0.9901 \pm 0.0072$	$100\theta_*$	1.04160	$1.04168 \pm 0.00056$
$A_{217}^{\text{CIB}}$	50.3	$49.1 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0028	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.74	$1060.09 \pm 0.62$
$A_{143}^{\text{tSZ}}$	3.54	$2.33^{+0.96}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9862 \pm 0.0072$	$r_{\text{drag}}$	147.443	$147.31 \pm 0.48$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.831^{+0.067}_{-0.074}$	$y_{217}^{\text{ACTe}}$	0.9613	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14034	$0.14058 \pm 0.00062$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{95}^{\text{SPT}}$	0.9810	$0.980^{+0.019}_{-0.021}$	$100\theta_{\text{D}}$	0.161092	$0.16091 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.634	$0.628 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9837	$0.9846 \pm 0.0095$	$z_{\text{eq}}$	3375.5	$3376 \pm 41$
$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0174	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8183	$0.8188 \pm 0.0076$
$c_{217}$	0.99742	$0.9974 \pm 0.0014$	$\Omega_{\Lambda}$	0.6916	$0.693 \pm 0.010$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07179	$0.07188 \pm 0.00059$
$\xi^{\text{tSZ-CIB}}$	0.125	$< 0.473$	$\Omega_{\text{m}}$	0.3084	$0.307 \pm 0.010$			
$A^{\text{kSZ}}$	3.86	$5.75^{+2.7}_{-1.7}$	$\sigma_8$	0.8264	$0.833 \pm 0.013$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.16$ ; R-1 = 0.00844

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.17 DR9: 0.27 6DF: 0.01 CMB - lowLike: 2014.33 lowl: -9.11 CamSpec: 7808.63 highL: 692.67

### 14.10 base\_nrun\_r\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022380	$0.02259 \pm 0.00030$	$\beta_1^1$	0.47	$0.49 \pm 0.56$	$z_{\text{re}}$	11.52	$12.5 \pm 1.3$
$\Omega_c h^2$	0.11793	$0.1171 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.49	$10.51 \pm 0.60$	$H_0$	68.36	$68.9 \pm 1.1$
$100\theta_{\text{MC}}$	1.04168	$1.04184 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.63	$76.7 \pm 4.5$	$r_{0.002}$	0.002	$< 0.158$
$\tau$	0.0963	$0.109^{+0.015}_{-0.019}$	$A_{95}^{\text{PS, SPT}}$	7.31	$7.60^{+1.3}_{-1.7}$	$10^9 A_s$	2.220	$2.282^{+0.068}_{-0.088}$
$n_s$	0.9609	$0.9635 \pm 0.0071$	$A_{150}^{\text{PS, SPT}}$	10.00	$10.03 \pm 0.51$	$\Omega_m h^2$	0.14095	$0.1404 \pm 0.0023$
$dn_s/d \ln k$	-0.0115	$-0.024^{+0.012}_{-0.010}$	$A_{220}^{\text{PS, SPT}}$	73.95	$74.3 \pm 4.4$	$\Omega_m h^3$	0.09635	$0.09668 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1002	$3.127^{+0.031}_{-0.038}$	$r_{95 \times 150}^{\text{PS}}$	0.810	$0.833 \pm 0.091$	$Y_p$	0.247844	$0.24793 \pm 0.00013$
$r_{0.05}$	0.002	$< 0.146$	$r_{95 \times 220}^{\text{PS}}$	0.584	$0.59^{+0.12}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8312	$1.832 \pm 0.013$
$A_{100}^{\text{PS}}$	216	$224 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9217	$0.937 \pm 0.023$	Age/Gyr	13.7644	$13.734 \pm 0.048$
$A_{143}^{\text{PS}}$	75.4	$77.1 \pm 8.3$	$A_{\text{dust}}^{\text{ACTs}}$	0.434	$0.43 \pm 0.19$	$z_*$	1089.826	$1089.50 \pm 0.50$
$A_{217}^{\text{PS}}$	62.0	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.850	$0.84 \pm 0.20$	$r_*$	144.95	$144.99 \pm 0.58$
$A_{143}^{\text{CIB}}$	3.09	$3.22 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9908	$0.9905 \pm 0.0073$	$100\theta_*$	1.04181	$1.04194 \pm 0.00061$
$A_{217}^{\text{CIB}}$	50.2	$49.2 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0025	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.89	$1060.32 \pm 0.64$
$A_{143}^{\text{tSZ}}$	3.48	$2.33^{+0.96}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9866	$0.9867 \pm 0.0072$	$r_{\text{drag}}$	147.62	$147.60 \pm 0.59$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.830^{+0.068}_{-0.075}$	$y_{217}^{\text{ACTe}}$	0.9612	$0.962 \pm 0.010$	$k_D$	0.14021	$0.14040 \pm 0.00068$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9816	$0.981 \pm 0.019$	$100\theta_D$	0.161039	$0.16080 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.633	$0.629 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9845	$0.9855 \pm 0.0095$	$z_{\text{eq}}$	3353	$3339 \pm 55$
$c_{100}$	1.000598	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0182	$1.023 \pm 0.023$	$100\theta_{\text{eq}}$	0.8229	$0.826 \pm 0.011$
$c_{217}$	0.99742	$0.9974 \pm 0.0014$	$\Omega_\Lambda$	0.6984	$0.704 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07218	$0.07251 \pm 0.00086$
$\xi^{\text{tSZ-CIB}}$	0.158	$< 0.469$	$\Omega_m$	0.3016	$0.296 \pm 0.014$			
$A^{\text{kSZ}}$	4.11	$5.72^{+2.7}_{-1.8}$	$\sigma_8$	0.8234	$0.829 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10512.54$ ; R-1 = 0.01374

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.37 lowl: -9.31 CamSpec: 7809.65 highL: 692.49 Hubble - HST: 5.13



### 14.11 base\_nrun\_r\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022307	$0.02250 \pm 0.00031$	$\beta_1^1$	0.48	$0.51 \pm 0.56$	$z_{\text{re}}$	11.52	$12.3 \pm 1.3$
$\Omega_c h^2$	0.11856	$0.1180 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.47	$10.51 \pm 0.60$	$H_0$	68.02	$68.4 \pm 1.2$
$100\theta_{\text{MC}}$	1.04155	$1.04167 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.81	$76.7 \pm 4.5$	$r_{0.002}$	0.011	$< 0.143$
$\tau$	0.0958	$0.107^{+0.015}_{-0.018}$	$A_{95}^{\text{PS, SPT}}$	7.40	$7.58^{+1.3}_{-1.6}$	$10^9 A_s$	2.221	$2.274^{+0.066}_{-0.085}$
$n_s$	0.9597	$0.9613 \pm 0.0072$	$A_{150}^{\text{PS, SPT}}$	9.98	$10.02 \pm 0.51$	$\Omega_m h^2$	0.14151	$0.1412 \pm 0.0024$
$dn_s/d \ln k$	-0.0113	$-0.023^{+0.012}_{-0.010}$	$A_{220}^{\text{PS, SPT}}$	73.95	$74.3 \pm 4.4$	$\Omega_m h^3$	0.09626	$0.09658 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1003	$3.124^{+0.030}_{-0.037}$	$r_{95 \times 150}^{\text{PS}}$	0.802	$0.833 \pm 0.090$	$Y_P$	0.247813	$0.24789 \pm 0.00013$
$r_{0.05}$	0.012	$< 0.134$	$r_{95 \times 220}^{\text{PS}}$	0.571	$0.59^{+0.12}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8335	$1.835 \pm 0.013$
$A_{100}^{\text{PS}}$	216	$224 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9200	$0.937 \pm 0.023$	Age/Gyr	13.7786	$13.752 \pm 0.049$
$A_{143}^{\text{PS}}$	76.1	$77.5 \pm 8.3$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	$z_*$	1089.97	$1089.69 \pm 0.52$
$A_{217}^{\text{PS}}$	62.5	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.84	$144.84 \pm 0.58$
$A_{143}^{\text{CIB}}$	3.05	$3.22 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9904	$0.9903 \pm 0.0073$	$100\theta_*$	1.04167	$1.04178 \pm 0.00061$
$A_{217}^{\text{CIB}}$	50.2	$49.1 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0029	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.78	$1060.17 \pm 0.64$
$A_{143}^{\text{tSZ}}$	3.46	$2.33^{+0.95}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9865	$0.9864 \pm 0.0072$	$r_{\text{drag}}$	147.53	$147.47 \pm 0.59$
$r_{143 \times 217}^{\text{PS}}$	0.819	$0.830^{+0.067}_{-0.075}$	$y_{217}^{\text{ACTe}}$	0.9615	$0.962 \pm 0.010$	$k_D$	0.14025	$0.14046 \pm 0.00068$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9809	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.161096	$0.16088 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.632	$0.628 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9838	$0.9850 \pm 0.0095$	$z_{\text{eq}}$	3366	$3358 \pm 57$
$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0177	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8201	$0.822 \pm 0.011$
$c_{217}$	0.99738	$0.9974 \pm 0.0014$	$\Omega_\Lambda$	0.6942	$0.698 \pm 0.015$	$r_{\text{drag}}/D_V(0.57)$	0.07194	$0.07218 \pm 0.00088$
$\xi^{\text{tSZ-CIB}}$	0.139	$< 0.471$	$\Omega_m$	0.3058	$0.302 \pm 0.015$			
$A^{\text{kSZ}}$	4.01	$5.74^{+2.7}_{-1.8}$	$\sigma_8$	0.8256	$0.831 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10935.93$ ; R-1 = 0.00902

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.33 lowl: -9.10 CamSpec: 7808.89 highL: 692.61 SN - SNLS: 429.02

## 14.12 base\_nrun\_r\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022223	$0.02242 \pm 0.00031$	$\beta_1^1$	0.48	$0.54 \pm 0.56$	$z_{\text{re}}$	11.49	$12.2 \pm 1.3$
$\Omega_c h^2$	0.11961	$0.1192 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.31	$10.50 \pm 0.59$	$H_0$	67.54	$67.9 \pm 1.2$
$100\theta_{\text{MC}}$	1.04139	$1.04151 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.31	$76.6 \pm 4.5$	$r_{0.002}$	0.000	$< 0.129$
$\tau$	0.0948	$0.104^{+0.015}_{-0.018}$	$A_{95}^{\text{PS, SPT}}$	7.43	$7.57^{+1.3}_{-1.6}$	$10^9 A_s$	2.221	$2.269^{+0.065}_{-0.083}$
$n_s$	0.9578	$0.9585 \pm 0.0073$	$A_{150}^{\text{PS, SPT}}$	9.80	$10.01 \pm 0.51$	$\Omega_m h^2$	0.14247	$0.1423 \pm 0.0025$
$dn_s/d \ln k$	-0.0093	$-0.022^{+0.011}_{-0.010}$	$A_{220}^{\text{PS, SPT}}$	73.17	$74.2 \pm 4.4$	$\Omega_m h^3$	0.09622	$0.09656 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1005	$3.122^{+0.030}_{-0.036}$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.833^{+0.11}_{-0.091}$	$Y_P$	0.247777	$0.24786 \pm 0.00013$
$r_{0.05}$	0.000	$< 0.124$	$r_{95 \times 220}^{\text{PS}}$	0.544	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8374	$1.840 \pm 0.014$
$A_{100}^{\text{PS}}$	213	$225 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9134	$0.937 \pm 0.023$	Age/Gyr	13.7958	$13.771 \pm 0.049$
$A_{143}^{\text{PS}}$	75.7	$78.0 \pm 8.3$	$A_{\text{dust}}^{\text{ACTs}}$	0.420	$0.44 \pm 0.19$	$z_*$	1090.17	$1089.90 \pm 0.53$
$A_{217}^{\text{PS}}$	62.6	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.857	$0.85 \pm 0.20$	$r_*$	144.64	$144.59 \pm 0.59$
$A_{143}^{\text{CIB}}$	3.10	$3.22 \pm 0.81$	$y_{148}^{\text{ACTs}}$	0.9901	$0.9900 \pm 0.0073$	$100\theta_*$	1.04154	$1.04163 \pm 0.00061$
$A_{217}^{\text{CIB}}$	51.5	$49.1 \pm 4.9$	$y_{217}^{\text{ACTs}}$	1.0023	$1.003 \pm 0.013$	$z_{\text{drag}}$	1059.63	$1060.07 \pm 0.64$
$A_{143}^{\text{tSZ}}$	4.11	$2.32^{+0.95}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9864	$0.9861 \pm 0.0072$	$r_{\text{drag}}$	147.35	$147.24 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.831^{+0.066}_{-0.074}$	$y_{217}^{\text{ACTe}}$	0.9608	$0.962 \pm 0.010$	$k_D$	0.14038	$0.14064 \pm 0.00068$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{95}^{\text{SPT}}$	0.9816	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.161160	$0.16093 \pm 0.00036$
$\gamma^{\text{CIB}}$	0.648	$0.628 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9829	$0.9844 \pm 0.0096$	$z_{\text{eq}}$	3389	$3384 \pm 59$
$c_{100}$	1.000610	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0164	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8156	$0.817 \pm 0.011$
$c_{217}$	0.99734	$0.9974 \pm 0.0014$	$\Omega_\Lambda$	0.6876	$0.691^{+0.017}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07157	$0.07176 \pm 0.00089$
$\xi^{\text{tSZ-CIB}}$	0.037	$< 0.474$	$\Omega_m$	0.3124	$0.309^{+0.015}_{-0.017}$			
$A^{\text{kSZ}}$	2.70	$5.75^{+2.7}_{-1.7}$	$\sigma_8$	0.8293	$0.833 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10637.13$ ; R-1 = 0.00742

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lowl: -8.71 CamSpec: 7807.85 highL: 692.88 SN - Union2.1: 130.48

### 14.13 base\_nrun\_r\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02210	$0.02310^{+0.00056}_{-0.00068}$	$r_{143 \times 217}^{\text{CIB}}$	0.543	$0.44 \pm 0.23$	$\Omega_m h^3$	0.09605	$0.09736^{+0.00084}_{-0.00099}$
$\Omega_c h^2$	0.12028	$0.1149 \pm 0.0041$	$\gamma^{\text{CIB}}$	0.547	$0.53 \pm 0.13$	$Y_P$	0.247725	$0.24814^{+0.00024}_{-0.00028}$
$100\theta_{\text{MC}}$	1.04126	$1.04223 \pm 0.00083$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8430	$1.828 \pm 0.017$
$\tau$	0.093	$0.215 \pm 0.067$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	Age/Gyr	13.815	$13.66^{+0.11}_{-0.091}$
$n_s$	0.9617	$0.976^{+0.013}_{-0.016}$	$\xi^{\text{tSZ-CIB}}$	0.098	—	$z_*$	1090.39	$1088.7 \pm 1.0$
$dn_s/d \ln k$	-0.0033	$-0.041^{+0.021}_{-0.016}$	$A^{\text{kSZ}}$	0.6	—	$r_*$	144.55	$145.21 \pm 0.73$
$\ln(10^{10} A_s)$	3.100	$3.34 \pm 0.13$	$\beta_1^1$	0.72	$0.58 \pm 0.57$	$100\theta_*$	1.04141	$1.04229 \pm 0.00079$
$r_{0.05}$	0.000	$< 0.111$	$\Omega_\Lambda$	0.6829	$0.718 \pm 0.024$	$z_{\text{drag}}$	1059.40	$1061.3^{+1.1}_{-1.3}$
$A_{100}^{\text{PS}}$	160	$172 \pm 60$	$\Omega_m$	0.3171	$0.282 \pm 0.024$	$r_{\text{drag}}$	147.31	$147.65 \pm 0.66$
$A_{143}^{\text{PS}}$	68.2	$53 \pm 10$	$\sigma_8$	0.8342	$0.910 \pm 0.044$	$k_D$	0.14033	$0.14068 \pm 0.00068$
$A_{217}^{\text{PS}}$	121.7	$104^{+20}_{-20}$	$z_{\text{re}}$	11.38	$19.4^{+4.5}_{-3.3}$	$100\theta_D$	0.16129	$0.16030 \pm 0.00058$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$H_0$	67.16	$70.3^{+2.0}_{-2.4}$	$z_{\text{eq}}$	3402	$3297 \pm 85$
$A_{217}^{\text{CIB}}$	25.1	$30^{+6}_{-9}$	$r_{0.002}$	0.000	$< 0.135$	$100\theta_{\text{eq}}$	0.8128	$0.836 \pm 0.018$
$A_{143}^{\text{tSZ}}$	5.71	—	$10^9 A_s$	2.219	$2.84^{+0.32}_{-0.41}$	$r_{\text{drag}}/D_V(0.57)$	0.07132	$0.0734^{+0.0015}_{-0.0017}$
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.845$	$\Omega_m h^2$	0.14302	$0.1386 \pm 0.0036$			

Best-fit  $\chi_{\text{eff}}^2 = 7790.59$ ; R-1 = 0.00817

$\chi_{\text{eff}}^2$ : CMB - lowl: -7.72 CamSpec: 7797.73

#### 14.14 base\_nrun\_r\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022262	$0.02254^{+0.00038}_{-0.00046}$	$r_{143 \times 217}^{\text{CIB}}$	0.612	$0.48^{+0.26}_{-0.20}$	$\Omega_m h^3$	0.09608	$0.09643 \pm 0.00068$
$\Omega_c h^2$	0.11810	$0.1166 \pm 0.0036$	$\gamma^{\text{CIB}}$	0.552	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247794	$0.24791 \pm 0.00018$
$100\theta_{\text{MC}}$	1.04151	$1.04176^{+0.00074}_{-0.00083}$	$c_{100}$	1.000582	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8336	$1.828 \pm 0.016$
$\tau$	0.0956	$0.114 \pm 0.038$	$c_{217}$	0.99646	$0.9964 \pm 0.0014$	Age/Gyr	13.782	$13.739^{+0.077}_{-0.069}$
$n_s$	0.9672	$0.967 \pm 0.011$	$\xi^{\text{tSZ-CIB}}$	0.282	$< 0.624$	$z_*$	1089.99	$1089.52 \pm 0.78$
$dn_s/d \ln k$	-0.0027	$-0.0179^{+0.012}_{-0.0098}$	$A^{\text{kSZ}}$	1.02	—	$r_*$	145.00	$145.18 \pm 0.72$
$\ln(10^{10} A_s)$	3.100	$3.134 \pm 0.070$	$\beta_1^1$	0.65	$0.51^{+0.61}_{-0.54}$	$100\theta_*$	1.04164	$1.04187^{+0.00073}_{-0.00081}$
$r_{0.05}$	0.000	$< 0.111$	$\Omega_\Lambda$	0.6963	$0.706^{+0.023}_{-0.020}$	$z_{\text{drag}}$	1059.63	$1060.16^{+0.74}_{-0.83}$
$A_{100}^{\text{PS}}$	156	$178 \pm 60$	$\Omega_m$	0.3037	$0.294^{+0.020}_{-0.023}$	$r_{\text{drag}}$	147.71	$147.80 \pm 0.67$
$A_{143}^{\text{PS}}$	64.8	$52^{+10}_{-10}$	$\sigma_8$	0.8288	$0.832 \pm 0.020$	$k_D$	0.14003	$0.14014 \pm 0.00066$
$A_{217}^{\text{PS}}$	119.5	$101^{+20}_{-20}$	$z_{\text{re}}$	11.50	$12.6^{+3.2}_{-2.6}$	$100\theta_D$	0.161167	$0.16089 \pm 0.00043$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	68.14	$69.0 \pm 1.8$	$z_{\text{eq}}$	3354	$3325 \pm 78$
$A_{217}^{\text{CIB}}$	24.7	$31^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.115$	$100\theta_{\text{eq}}$	0.8222	$0.829 \pm 0.016$
$A_{143}^{\text{tSZ}}$	5.35	—	$10^9 A_s$	2.220	$2.30^{+0.15}_{-0.17}$	$r_{\text{drag}}/D_V(0.57)$	0.07206	$0.0727 \pm 0.0013$
$r_{143 \times 217}^{\text{PS}}$	0.920	$> 0.834$	$\Omega_m h^2$	0.14101	$0.1398 \pm 0.0032$			

Best-fit  $\chi_{\text{eff}}^2 = 7801.13$ ; R-1 = 0.04391

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.89 lowl: -8.30 CamSpec: 7798.99

### 14.15 base\_nrun\_r\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022226	$0.02273 \pm 0.00037$	$r_{143 \times 217}^{\text{CIB}}$	0.351	$0.45^{+0.26}_{-0.23}$	$\Omega_m h^3$	0.09617	$0.09698 \pm 0.00074$
$\Omega_c h^2$	0.11896	$0.1176 \pm 0.0019$	$\gamma^{\text{CIB}}$	0.529	$0.54 \pm 0.13$	$Y_P$	0.247778	$0.24799 \pm 0.00015$
$100\theta_{\text{MC}}$	1.04152	$1.04178 \pm 0.00060$	$c_{100}$	1.000593	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8358	$1.838 \pm 0.011$
$\tau$	0.0954	$0.177 \pm 0.046$	$c_{217}$	0.99632	$0.9964 \pm 0.0014$	Age/Gyr	13.789	$13.725 \pm 0.052$
$n_s$	0.9598	$0.9672 \pm 0.0077$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.11	$1089.38 \pm 0.54$
$dn_s/d \ln k$	-0.0101	$-0.033^{+0.015}_{-0.013}$	$A^{\text{kSZ}}$	8.01	—	$r_*$	144.800	$144.77 \pm 0.44$
$\ln(10^{10} A_s)$	3.101	$3.265 \pm 0.091$	$\beta_1^1$	0.66	$0.62 \pm 0.57$	$100\theta_*$	1.04166	$1.04188 \pm 0.00058$
$r_{0.05}$	0.000	$< 0.104$	$\Omega_\Lambda$	0.6915	$0.702 \pm 0.012$	$z_{\text{drag}}$	1059.59	$1060.66 \pm 0.79$
$A_{100}^{\text{PS}}$	136	$177 \pm 60$	$\Omega_m$	0.3085	$0.298 \pm 0.012$	$r_{\text{drag}}$	147.520	$147.32 \pm 0.48$
$A_{143}^{\text{PS}}$	43.7	$54 \pm 10$	$\sigma_8$	0.8278	$0.889 \pm 0.036$	$k_D$	0.14020	$0.14078 \pm 0.00065$
$A_{217}^{\text{PS}}$	107.4	$104^{+20}_{-20}$	$z_{\text{re}}$	11.52	$17.3^{+3.5}_{-2.6}$	$100\theta_D$	0.161194	$0.16060 \pm 0.00044$
$A_{143}^{\text{CIB}}$	3.57	$< 11.6$	$H_0$	67.81	$68.80 \pm 0.96$	$z_{\text{eq}}$	3373.7	$3353 \pm 42$
$A_{217}^{\text{CIB}}$	26.7	$30^{+6}_{-10}$	$r_{0.002}$	0.000	$< 0.116$	$100\theta_{\text{eq}}$	0.8185	$0.8239 \pm 0.0082$
$A_{143}^{\text{tSZ}}$	7.88	—	$10^9 A_s$	2.222	$2.63 \pm 0.24$	$r_{\text{drag}}/D_V(0.57)$	0.07180	$0.07236 \pm 0.00068$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.847$	$\Omega_m h^2$	0.14183	$0.1410 \pm 0.0017$			

Best-fit  $\chi_{\text{eff}}^2 = 7791.54$ ; R-1 = 0.01429

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.16 6DF: 0.01 DR9: 0.27 CMB - lowl: -9.07 CamSpec: 7798.43

### 14.16 base\_nrun\_r\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02235	$0.02351 \pm 0.00052$	$r_{143 \times 217}^{\text{CIB}}$	0.310	$0.43 \pm 0.23$	$\Omega_m h^3$	0.09624	$0.09780 \pm 0.00085$
$\Omega_c h^2$	0.11754	$0.1119 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.530	$0.53 \pm 0.13$	$Y_P$	0.247831	$0.24831 \pm 0.00021$
$100\theta_{\text{MC}}$	1.04171	$1.04272 \pm 0.00072$	$c_{100}$	1.000597	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8313	$1.818 \pm 0.014$
$\tau$	0.098	$0.258^{+0.060}_{-0.054}$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.765	$13.591 \pm 0.080$
$n_s$	0.9679	$0.986 \pm 0.012$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.83	$1087.98 \pm 0.80$
$dn_s/d \ln k$	-0.0045	$-0.050^{+0.019}_{-0.017}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.08	$145.67 \pm 0.59$
$\ln(10^{10} A_s)$	3.105	$3.42^{+0.12}_{-0.10}$	$\beta_1^1$	0.68	$0.53 \pm 0.57$	$100\theta_*$	1.04184	$1.04274 \pm 0.00069$
$r_{0.05}$	0.000	$< 0.120$	$\Omega_\Lambda$	0.7003	$0.736^{+0.019}_{-0.017}$	$z_{\text{drag}}$	1059.78	$1062.0 \pm 1.0$
$A_{100}^{\text{PS}}$	141	$166 \pm 60$	$\Omega_m$	0.2997	$0.264^{+0.017}_{-0.019}$	$r_{\text{drag}}$	147.76	$147.99 \pm 0.57$
$A_{143}^{\text{PS}}$	57.3	$51 \pm 10$	$\sigma_8$	0.8276	$0.933 \pm 0.040$	$k_D$	0.14004	$0.14060 \pm 0.00068$
$A_{217}^{\text{PS}}$	120.1	$104^{+20}_{-10}$	$z_{\text{re}}$	11.71	$22^{+3}_{-2}$	$100\theta_D$	0.16110	$0.15996 \pm 0.00051$
$A_{143}^{\text{CIB}}$	2.04	$< 10.7$	$H_0$	68.48	$71.9 \pm 1.7$	$z_{\text{eq}}$	3343	$3236 \pm 65$
$A_{217}^{\text{CIB}}$	25.8	$29^{+6}_{-9}$	$r_{0.002}$	0.000	$< 0.159$	$100\theta_{\text{eq}}$	0.8246	$0.849 \pm 0.014$
$A_{143}^{\text{tSZ}}$	7.97	—	$10^9 A_s$	2.230	$3.06 \pm 0.33$	$r_{\text{drag}}/D_V(0.57)$	0.07230	$0.0746 \pm 0.0012$
$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.847$	$\Omega_m h^2$	0.14054	$0.1361 \pm 0.0027$			

Best-fit  $\chi_{\text{eff}}^2 = 7796.18$ ; R-1 = 0.00873

$\chi_{\text{eff}}^2$ : CMB - lowl: -8.70 CamSpec: 7799.24 Hubble - HST: 4.91

### 14.17 base\_nrun\_r\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02223	$0.02341^{+0.00055}_{-0.00064}$	$r_{143 \times 217}^{\text{CIB}}$	0.405	$0.43 \pm 0.23$	$\Omega_m h^3$	0.09612	$0.09767 \pm 0.00090$
$\Omega_c h^2$	0.11900	$0.1125 \pm 0.0035$	$\gamma^{\text{CIB}}$	0.526	$0.53 \pm 0.13$	$Y_P$	0.247779	$0.24827 \pm 0.00024$
$100\theta_{\text{MC}}$	1.04139	$1.04261 \pm 0.00078$	$c_{100}$	1.000593	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8356	$1.819 \pm 0.015$
$\tau$	0.095	$0.248 \pm 0.062$	$c_{217}$	0.99632	$0.9964 \pm 0.0014$	Age/Gyr	13.793	$13.607^{+0.099}_{-0.088}$
$n_s$	0.9597	$0.984^{+0.013}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.11	$1088.14 \pm 0.92$
$dn_s/d \ln k$	-0.0103	$-0.048^{+0.020}_{-0.017}$	$A^{\text{kSZ}}$	7.19	—	$r_*$	144.79	$145.59 \pm 0.65$
$\ln(10^{10} A_s)$	3.101	$3.40 \pm 0.12$	$\beta_1^1$	0.66	$0.54 \pm 0.57$	$100\theta_*$	1.04154	$1.04264 \pm 0.00074$
$r_{0.05}$	0.000	$< 0.118$	$\Omega_\Lambda$	0.6910	$0.732^{+0.022}_{-0.020}$	$z_{\text{drag}}$	1059.63	$1061.8^{+1.1}_{-1.2}$
$A_{100}^{\text{PS}}$	136	$167 \pm 60$	$\Omega_m$	0.3090	$0.268^{+0.020}_{-0.022}$	$r_{\text{drag}}$	147.51	$147.94 \pm 0.60$
$A_{143}^{\text{PS}}$	43.3	$51 \pm 10$	$\sigma_8$	0.8277	$0.927 \pm 0.042$	$k_D$	0.14022	$0.14058 \pm 0.00068$
$A_{217}^{\text{PS}}$	107.3	$104^{+20}_{-20}$	$z_{\text{re}}$	11.52	$21^{+4}_{-3}$	$100\theta_D$	0.16117	$0.16004 \pm 0.00055$
$A_{143}^{\text{CIB}}$	4.09	$< 10.7$	$H_0$	67.76	$71.6 \pm 2.0$	$z_{\text{eq}}$	3375	$3248 \pm 74$
$A_{217}^{\text{CIB}}$	27.4	$29^{+6}_{-9}$	$r_{0.002}$	0.000	$< 0.153$	$100\theta_{\text{eq}}$	0.8182	$0.847 \pm 0.016$
$A_{143}^{\text{tSZ}}$	8.30	—	$10^9 A_s$	2.221	$3.01^{+0.33}_{-0.40}$	$r_{\text{drag}}/D_V(0.57)$	0.07176	$0.0744 \pm 0.0014$
$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.847$	$\Omega_m h^2$	0.14187	$0.1366 \pm 0.0031$			

Best-fit  $\chi_{\text{eff}}^2 = 8219.37$ ; R-1 = 0.00798

$\chi_{\text{eff}}^2$ : CMB - lowl: -9.09 CamSpec: 7798.39 SN - SNLS: 429.31

### 14.18 base\_nrun\_r\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02222	$0.02313^{+0.00052}_{-0.00063}$	$r_{143 \times 217}^{\text{CIB}}$	0.420	$0.44 \pm 0.23$	$\Omega_m h^3$	0.09622	$0.09739^{+0.00083}_{-0.00096}$
$\Omega_c h^2$	0.11960	$0.1146 \pm 0.0036$	$\gamma^{\text{CIB}}$	0.525	$0.53 \pm 0.13$	$Y_P$	0.247775	$0.24815^{+0.00022}_{-0.00026}$
$100\theta_{\text{MC}}$	1.04141	$1.04227 \pm 0.00078$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8387	$1.827 \pm 0.015$
$\tau$	0.094	$0.219 \pm 0.062$	$c_{217}$	0.99633	$0.9964 \pm 0.0014$	Age/Gyr	13.796	$13.66^{+0.10}_{-0.083}$
$n_s$	0.9579	$0.977^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.18	$1088.7^{+1.0}_{-0.91}$
$dn_s/d \ln k$	-0.0121	$-0.041^{+0.020}_{-0.015}$	$A^{\text{kSZ}}$	8.37	—	$r_*$	144.64	$145.25 \pm 0.67$
$\ln(10^{10} A_s)$	3.100	$3.34 \pm 0.12$	$\beta_1^1$	0.68	$0.57 \pm 0.57$	$100\theta_*$	1.04154	$1.04233 \pm 0.00075$
$r_{0.05}$	0.000	$< 0.113$	$\Omega_\Lambda$	0.6877	$0.720 \pm 0.022$	$z_{\text{drag}}$	1059.63	$1061.3^{+1.0}_{-1.2}$
$A_{100}^{\text{PS}}$	134	$171 \pm 60$	$\Omega_m$	0.3123	$0.280 \pm 0.022$	$r_{\text{drag}}$	147.36	$147.69 \pm 0.62$
$A_{143}^{\text{PS}}$	41.6	$53 \pm 10$	$\sigma_8$	0.8287	$0.912 \pm 0.043$	$k_D$	0.14037	$0.14066 \pm 0.00068$
$A_{217}^{\text{PS}}$	105.6	$104^{+20}_{-20}$	$z_{\text{re}}$	11.45	$19.6^{+4.2}_{-3.1}$	$100\theta_D$	0.16117	$0.16027 \pm 0.00055$
$A_{143}^{\text{CIB}}$	4.02	$< 11.0$	$H_0$	67.54	$70.4^{+1.8}_{-2.1}$	$z_{\text{eq}}$	3389	$3291 \pm 77$
$A_{217}^{\text{CIB}}$	27.4	$29^{+6}_{-9}$	$r_{0.002}$	0.000	$< 0.137$	$100\theta_{\text{eq}}$	0.8157	$0.837^{+0.016}_{-0.018}$
$A_{143}^{\text{tSZ}}$	8.50	—	$10^9 A_s$	2.221	$2.85^{+0.31}_{-0.39}$	$r_{\text{drag}}/D_V(0.57)$	0.07157	$0.0735^{+0.0013}_{-0.0015}$
$r_{143 \times 217}^{\text{PS}}$	0.885	$> 0.846$	$\Omega_m h^2$	0.14247	$0.1384 \pm 0.0032$			

Best-fit  $\chi_{\text{eff}}^2 = 7920.31$ ; R-1 = 0.00833

$\chi_{\text{eff}}^2$ : CMB - lowl: -9.25 CamSpec: 7798.31 SN - Union2.1: 130.48



### 14.19 base\_nrun\_r\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02257	$0.02293^{+0.00070}_{-0.00092}$	$\sigma_8$	0.8104	$0.802 \pm 0.029$	$r_*$	145.64	$145.9 \pm 1.6$
$\Omega_c h^2$	0.1147	$0.1128 \pm 0.0074$	$z_{\text{re}}$	10.62	$11.1^{+1.2}_{-1.4}$	$100\theta_*$	1.04038	$1.0414 \pm 0.0024$
$100\theta_{\text{MC}}$	1.04026	$1.0413 \pm 0.0025$	$H_0$	69.20	$70.7^{+3.4}_{-4.3}$	$z_{\text{drag}}$	1060.09	$1060.8^{+1.4}_{-1.6}$
$\tau$	0.0874	$0.095^{+0.014}_{-0.017}$	$r_{0.002}$	0.052	$< 0.258$	$r_{\text{drag}}$	148.27	$148.4 \pm 1.5$
$n_s$	0.9683	$0.969^{+0.032}_{-0.044}$	$10^9 A_s$	2.209	$2.232^{+0.074}_{-0.092}$	$k_D$	0.13968	$0.1397 \pm 0.0015$
$dn_s/d \ln k$	-0.0091	$-0.024 \pm 0.027$	$\Omega_m h^2$	0.1380	$0.1364 \pm 0.0068$	$100\theta_D$	0.16066	$0.16048 \pm 0.00068$
$\ln(10^{10} A_s)$	3.0950	$3.105^{+0.034}_{-0.040}$	$\Omega_m h^3$	0.09546	$0.0962 \pm 0.0019$	$z_{\text{eq}}$	3281	$3243 \pm 160$
$r_{0.05}$	0.054	$0.178^{+0.049}_{-0.18}$	$Y_P$	0.247926	$0.24807^{+0.00030}_{-0.00037}$	$100\theta_{\text{eq}}$	0.8357	$0.846^{+0.033}_{-0.038}$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8547	$1.845 \pm 0.039$	$r_{\text{drag}}/D_V(0.57)$	0.07287	$0.0740^{+0.0026}_{-0.0033}$
$\Omega_\Lambda$	0.7119	$0.724^{+0.048}_{-0.039}$	Age/Gyr	13.772	$13.69^{+0.19}_{-0.15}$			
$\Omega_m$	0.2881	$0.276^{+0.039}_{-0.048}$	$z_*$	1089.31	$1088.7^{+1.6}_{-1.4}$			

Best-fit  $\chi^2_{\text{eff}} = 7557.39$ ; R-1 = 0.01019  
 $\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.39

## 14.20 base\_nrun\_r\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022488	$0.02250 \pm 0.00048$	$\sigma_8$	0.8193	$0.816 \pm 0.019$	$r_*$	145.25	$145.12 \pm 0.80$
$\Omega_c h^2$	0.11648	$0.1170 \pm 0.0027$	$z_{\text{re}}$	10.70	$11.3 \pm 1.3$	$100\theta_*$	1.04008	$1.0406 \pm 0.0021$
$100\theta_{\text{MC}}$	1.03997	$1.0404 \pm 0.0021$	$H_0$	68.39	$68.4 \pm 1.0$	$z_{\text{drag}}$	1060.05	$1060.1 \pm 1.1$
$\tau$	0.0876	$0.094^{+0.014}_{-0.017}$	$r_{0.002}$	0.001	$< 0.215$	$r_{\text{drag}}$	147.89	$147.76 \pm 0.91$
$n_s$	0.9669	$0.949 \pm 0.020$	$10^9 A_s$	2.218	$2.252^{+0.070}_{-0.085}$	$k_D$	0.14001	$0.1402 \pm 0.0012$
$dn_s/d \ln k$	-0.0029	$-0.034^{+0.025}_{-0.020}$	$\Omega_m h^2$	0.13961	$0.1401 \pm 0.0027$	$100\theta_D$	0.16067	$0.16074 \pm 0.00059$
$\ln(10^{10} A_s)$	3.0990	$3.114^{+0.032}_{-0.037}$	$\Omega_m h^3$	0.09548	$0.0958 \pm 0.0018$	$z_{\text{eq}}$	3321	$3333 \pm 65$
$r_{0.05}$	0.001	$< 0.194$	$Y_P$	0.247890	$0.24789 \pm 0.00020$	$100\theta_{\text{eq}}$	0.8278	$0.826 \pm 0.011$
$A_{\text{tSZ}}$	0.64	—	$10^9 A_s e^{-2\tau}$	1.8611	$1.863 \pm 0.023$	$r_{\text{drag}}/D_V(0.57)$	0.07223	$0.07220 \pm 0.00074$
$\Omega_\Lambda$	0.7015	$0.700 \pm 0.013$	Age/Gyr	13.798	$13.785 \pm 0.091$			
$\Omega_m$	0.2985	$0.300 \pm 0.013$	$z_*$	1089.56	$1089.61 \pm 0.63$			

Best-fit  $\chi^2_{\text{eff}} = 7559.16$ ; R-1 = 0.01711

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.06 DR7: 0.41 DR9: 0.79 CMB - WMAP: 7557.91

## 14.21 base\_nrun\_r\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02322	$0.02333 \pm 0.00058$	$\sigma_8$	0.7976	$0.789 \pm 0.023$	$r_*$	146.67	$146.8 \pm 1.1$
$\Omega_c h^2$	0.10905	$0.1084 \pm 0.0044$	$z_{\text{re}}$	11.02	$10.9 \pm 1.2$	$100\theta_*$	1.04188	$1.0422 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04182	$1.0421 \pm 0.0022$	$H_0$	72.44	$72.9 \pm 2.1$	$z_{\text{drag}}$	1061.15	$1061.4 \pm 1.2$
$\tau$	0.0962	$0.096^{+0.014}_{-0.017}$	$r_{0.002}$	0.116	$< 0.296$	$r_{\text{drag}}$	149.11	$149.2 \pm 1.1$
$n_s$	0.9936	$0.988 \pm 0.026$	$10^9 A_s$	2.219	$2.213^{+0.070}_{-0.086}$	$k_D$	0.13924	$0.1392 \pm 0.0013$
$dn_s/d \ln k$	-0.0009	$-0.015^{+0.027}_{-0.023}$	$\Omega_m h^2$	0.13291	$0.1324 \pm 0.0042$	$100\theta_D$	0.16027	$0.16022 \pm 0.00057$
$\ln(10^{10} A_s)$	3.0996	$3.096^{+0.033}_{-0.038}$	$\Omega_m h^3$	0.09628	$0.0965 \pm 0.0018$	$z_{\text{eq}}$	3161	$3149 \pm 100$
$r_{0.05}$	0.113	$0.201^{+0.096}_{-0.14}$	$Y_P$	0.248195	$0.24824 \pm 0.00024$	$100\theta_{\text{eq}}$	0.8627	$0.866 \pm 0.021$
$A_{\text{tSZ}}$	0.36	—	$10^9 A_s e^{-2\tau}$	1.8304	$1.826 \pm 0.028$	$r_{\text{drag}}/D_V(0.57)$	0.07529	$0.0757 \pm 0.0017$
$\Omega_\Lambda$	0.7467	$0.750^{+0.024}_{-0.019}$	Age/Gyr	13.630	$13.60 \pm 0.11$			
$\Omega_m$	0.2533	$0.250^{+0.019}_{-0.024}$	$z_*$	1088.04	$1087.88 \pm 0.88$			

Best-fit  $\chi^2_{\text{eff}} = 7558.48$ ; R-1 = 0.01796

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.11 Hubble - HST: 0.37

## 14.22 base\_nrun\_r\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02326	$0.02332^{+0.00068}_{-0.00076}$	$\sigma_8$	0.7970	$0.788 \pm 0.024$	$r_*$	146.66	$146.8 \pm 1.2$
$\Omega_c h^2$	0.1090	$0.1083 \pm 0.0054$	$z_{\text{re}}$	10.90	$10.9^{+1.2}_{-1.3}$	$100\theta_*$	1.04188	$1.0421 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04183	$1.0420 \pm 0.0024$	$H_0$	72.51	$72.9^{+2.8}_{-3.1}$	$z_{\text{drag}}$	1061.27	$1061.3 \pm 1.4$
$\tau$	0.0949	$0.096^{+0.014}_{-0.017}$	$r_{0.002}$	0.144	$< 0.295$	$r_{\text{drag}}$	149.08	$149.2 \pm 1.2$
$n_s$	0.9956	$0.988 \pm 0.031$	$10^9 A_s$	2.216	$2.211^{+0.069}_{-0.087}$	$k_D$	0.13930	$0.1392 \pm 0.0013$
$dn_s/d \ln k$	-0.0017	$-0.014 \pm 0.026$	$\Omega_m h^2$	0.1329	$0.1323 \pm 0.0050$	$100\theta_D$	0.16022	$0.16024 \pm 0.00062$
$\ln(10^{10} A_s)$	3.0983	$3.096^{+0.032}_{-0.039}$	$\Omega_m h^3$	0.09635	$0.0964 \pm 0.0019$	$z_{\text{eq}}$	3160	$3146 \pm 120$
$r_{0.05}$	0.137	$0.200^{+0.093}_{-0.15}$	$Y_P$	0.248214	$0.24823 \pm 0.00029$	$100\theta_{\text{eq}}$	0.8630	$0.867^{+0.025}_{-0.029}$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8330	$1.825 \pm 0.030$	$r_{\text{drag}}/D_V(0.57)$	0.07533	$0.0757^{+0.0021}_{-0.0024}$
$\Omega_\Lambda$	0.7473	$0.750^{+0.031}_{-0.027}$	Age/Gyr	13.625	$13.61 \pm 0.14$			
$\Omega_m$	0.2527	$0.250^{+0.027}_{-0.031}$	$z_*$	1087.98	$1087.9 \pm 1.1$			

Best-fit  $\chi^2_{\text{eff}} = 7983.78$ ; R-1 = 0.01498

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.00 SN - SNLS: 425.78

### 14.23 base\_nrun\_r\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02274	$0.02290^{+0.00064}_{-0.00075}$	$\sigma_8$	0.8098	$0.802 \pm 0.025$	$r_*$	145.91	$145.9 \pm 1.3$
$\Omega_c h^2$	0.1132	$0.1127 \pm 0.0057$	$z_{\text{re}}$	10.99	$11.1^{+1.2}_{-1.4}$	$100\theta_*$	1.04057	$1.0414 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04047	$1.0413 \pm 0.0024$	$H_0$	69.96	$70.6^{+2.6}_{-3.2}$	$z_{\text{drag}}$	1060.39	$1060.7 \pm 1.4$
$\tau$	0.0928	$0.095^{+0.014}_{-0.017}$	$r_{0.002}$	0.040	$< 0.255$	$r_{\text{drag}}$	148.48	$148.5 \pm 1.3$
$n_s$	0.9755	$0.969^{+0.029}_{-0.034}$	$10^9 A_s$	2.221	$2.231^{+0.073}_{-0.088}$	$k_D$	0.13957	$0.1397 \pm 0.0014$
$dn_s/d \ln k$	-0.0034	$-0.024^{+0.027}_{-0.024}$	$\Omega_m h^2$	0.1366	$0.1363 \pm 0.0054$	$100\theta_D$	0.16053	$0.16049 \pm 0.00064$
$\ln(10^{10} A_s)$	3.1006	$3.105^{+0.034}_{-0.038}$	$\Omega_m h^3$	0.09559	$0.0961 \pm 0.0019$	$z_{\text{eq}}$	3249	$3241 \pm 130$
$r_{0.05}$	0.042	$0.177^{+0.059}_{-0.16}$	$Y_P$	0.247996	$0.24806 \pm 0.00028$	$100\theta_{\text{eq}}$	0.8424	$0.846^{+0.025}_{-0.029}$
$A_{\text{tSZ}}$	0.79	—	$10^9 A_s e^{-2\tau}$	1.8449	$1.844 \pm 0.033$	$r_{\text{drag}}/D_V(0.57)$	0.07344	$0.0739^{+0.0020}_{-0.0025}$
$\Omega_\Lambda$	0.7209	$0.725^{+0.035}_{-0.031}$	Age/Gyr	13.742	$13.70^{+0.15}_{-0.13}$			
$\Omega_m$	0.2791	$0.275^{+0.031}_{-0.035}$	$z_*$	1088.97	$1088.8 \pm 1.2$			

Best-fit  $\chi^2_{\text{eff}} = 7687.60$ ; R-1 = 0.01063

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.72 SN - Union2.1: 129.88

## 15 nrun+r+omegak

### 15.1 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022236	$0.02277^{+0.00040}_{-0.00050}$	$r_{143 \times 217}^{\text{PS}}$	0.921	$> 0.847$	$\Omega_m h^2$	0.14297	$0.1397 \pm 0.0030$
$\Omega_c h^2$	0.12009	$0.1163 \pm 0.0033$	$r_{143 \times 217}^{\text{CIB}}$	0.529	$0.42 \pm 0.23$	$\Omega_m h^3$	0.0900	$0.074 \pm 0.010$
$100\theta_{\text{MC}}$	1.04130	$1.04196 \pm 0.00073$	$\gamma^{\text{CIB}}$	0.584	$0.53^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.247782	$0.24801^{+0.00017}_{-0.00021}$
$\tau$	0.0921	$0.095^{+0.014}_{-0.016}$	$c_{100}$	1.000593	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8453	$1.831 \pm 0.015$
$\Omega_K$	-0.0103	$-0.058^{+0.046}_{-0.023}$	$c_{217}$	0.99647	$0.9964 \pm 0.0014$	Age/Gyr	14.25	$15.57^{+0.84}_{-1.0}$
$n_s$	0.9615	$0.970 \pm 0.010$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.20	$1089.21^{+0.84}_{-0.72}$
$dn_s/d \ln k$	-0.0097	$-0.023^{+0.015}_{-0.012}$	$A^{\text{kSZ}}$	1.09	$< 6.13$	$r_*$	144.50	$145.09 \pm 0.68$
$\ln(10^{10} A_s)$	3.0995	$3.098^{+0.029}_{-0.033}$	$\beta_1^1$	0.80	$0.53 \pm 0.57$	$100\theta_*$	1.04145	$1.04204 \pm 0.00071$
$r_{0.05}$	0.023	$0.204^{+0.086}_{-0.17}$	$\Omega_\Lambda$	0.650	$0.540^{+0.11}_{-0.066}$	$z_{\text{drag}}$	1059.70	$1060.66^{+0.80}_{-0.95}$
$A_{100}^{\text{PS}}$	161	$167 \pm 60$	$\Omega_m$	0.361	$0.518^{+0.089}_{-0.15}$	$r_{\text{drag}}$	147.21	$147.64 \pm 0.64$
$A_{143}^{\text{PS}}$	67.2	$51 \pm 10$	$\sigma_8$	0.8259	$0.786^{+0.035}_{-0.026}$	$k_{\text{D}}$	0.14054	$0.14048 \pm 0.00068$
$A_{217}^{\text{PS}}$	118.5	$105^{+20}_{-10}$	$z_{\text{re}}$	11.23	$11.1 \pm 1.2$	$100\theta_{\text{D}}$	0.161113	$0.16062 \pm 0.00046$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	63.0	$53 \pm 7$	$z_{\text{eq}}$	3401	$3323 \pm 73$
$A_{217}^{\text{CIB}}$	26.5	$29^{+6}_{-9}$	$r_{0.002}$	0.021	$< 0.300$	$100\theta_{\text{eq}}$	0.8135	$0.830^{+0.014}_{-0.016}$
$A_{143}^{\text{tSZ}}$	5.78	—	$10^9 A_s$	2.219	$2.216^{+0.062}_{-0.075}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.06810	$0.0607^{+0.0047}_{-0.0052}$

Best-fit  $\chi_{\text{eff}}^2 = 9803.10$ ; R-1 = 0.00718

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.88 lowl: -9.27 CamSpec: 7797.16

## 15.2 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022342	$0.02292^{+0.00041}_{-0.00048}$	$A^{\text{KSZ}}$	2.02	$4.55^{+2.6}_{-2.2}$	$\sigma_8$	0.8211	$0.777^{+0.034}_{-0.027}$
$\Omega_c h^2$	0.11931	$0.1156 \pm 0.0033$	$\beta_1^1$	0.49	$0.42 \pm 0.56$	$z_{\text{re}}$	11.41	$11.1^{+1.2}_{-1.4}$
$100\theta_{\text{MC}}$	1.04145	$1.04208 \pm 0.00073$	$A_{148}^{\text{PS, ACT}}$	10.31	$10.67 \pm 0.60$	$H_0$	62.1	$51^{+6}_{-7}$
$\tau$	0.0950	$0.096^{+0.014}_{-0.017}$	$A_{218}^{\text{PS, ACT}}$	76.43	$76.7 \pm 4.6$	$r_{0.002}$	0.037	$0.301^{+0.082}_{-0.29}$
$\Omega_K$	-0.0136	$-0.070^{+0.047}_{-0.026}$	$A_{95}^{\text{PS, SPT}}$	7.53	$7.95^{+1.4}_{-1.7}$	$10^9 A_s$	2.221	$2.217^{+0.060}_{-0.079}$
$n_s$	0.9597	$0.9693^{+0.0095}_{-0.011}$	$A_{150}^{\text{PS, SPT}}$	9.86	$10.27 \pm 0.52$	$\Omega_m h^2$	0.14229	$0.1391 \pm 0.0030$
$dn_s/d \ln k$	-0.0104	$-0.028^{+0.016}_{-0.013}$	$A_{220}^{\text{PS, SPT}}$	73.25	$74.6 \pm 4.5$	$\Omega_m h^3$	0.0884	$0.0711^{+0.0088}_{-0.010}$
$\ln(10^{10} A_s)$	3.1005	$3.098^{+0.028}_{-0.035}$	$r_{95 \times 150}^{\text{PS}}$	0.783	$0.830 \pm 0.088$	$Y_p$	0.247828	$0.24807^{+0.00018}_{-0.00020}$
$r_{0.05}$	0.040	$0.24^{+0.13}_{-0.15}$	$r_{95 \times 220}^{\text{PS}}$	0.532	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8368	$1.828 \pm 0.015$
$A_{100}^{\text{PS}}$	208	$213 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9107	$0.934^{+0.023}_{-0.026}$	Age/Gyr	14.36	$15.87^{+0.84}_{-0.95}$
$A_{143}^{\text{PS}}$	73.4	$72 \pm 9$	$A_{\text{dust}}^{\text{ACTs}}$	0.410	$0.43^{+0.19}_{-0.21}$	$z_*$	1089.99	$1088.98 \pm 0.75$
$A_{217}^{\text{PS}}$	61.1	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.84 \pm 0.20$	$r_*$	144.62	$145.16 \pm 0.67$
$A_{143}^{\text{CIB}}$	3.08	$3.27 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9910	$0.9924 \pm 0.0075$	$100\theta_*$	1.04158	$1.04215 \pm 0.00071$
$A_{217}^{\text{CIB}}$	51.9	$50.3 \pm 5.1$	$y_{217}^{\text{ACTs}}$	1.0033	$1.007 \pm 0.014$	$z_{\text{drag}}$	1059.89	$1060.94^{+0.81}_{-0.92}$
$A_{143}^{\text{tSZ}}$	4.38	$2.54^{+1.2}_{-1.8}$	$y_{148}^{\text{ACTe}}$	0.9872	$0.9888 \pm 0.0074$	$r_{\text{drag}}$	147.30	$147.67 \pm 0.65$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.823 \pm 0.073$	$y_{217}^{\text{ACTe}}$	0.9616	$0.965 \pm 0.010$	$k_D$	0.14052	$0.14055 \pm 0.00069$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.926$	$y_{95}^{\text{SPT}}$	0.9837	$0.987 \pm 0.020$	$100\theta_D$	0.161013	$0.16048 \pm 0.00045$
$\gamma^{\text{CIB}}$	0.655	$0.649 \pm 0.082$	$y_{150}^{\text{SPT}}$	0.9852	$0.991 \pm 0.010$	$z_{\text{eq}}$	3385	$3309 \pm 72$
$c_{100}$	1.000579	$1.00058 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0171	$1.027 \pm 0.023$	$100\theta_{\text{eq}}$	0.8168	$0.833^{+0.014}_{-0.016}$
$c_{217}$	0.99741	$0.9974 \pm 0.0013$	$\Omega_\Lambda$	0.645	$0.513^{+0.11}_{-0.070}$	$r_{\text{drag}}/D_V(0.57)$	0.06743	$0.0591^{+0.0042}_{-0.0049}$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.370$	$\Omega_m$	0.369	$0.557^{+0.095}_{-0.16}$			

Best-fit  $\chi_{\text{eff}}^2 = 10503.92$ ; R-1 = 0.01702

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2015.02 lowl: -9.11 CamSpec: 7806.43 highL: 691.46

### 15.3 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022195	$0.02241 \pm 0.00034$	$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.839$	$\Omega_m h^2$	0.14205	$0.1416 \pm 0.0027$
$\Omega_c h^2$	0.11921	$0.1186 \pm 0.0029$	$r_{143 \times 217}^{\text{CIB}}$	0.400	$0.48^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.09649	$0.0962 \pm 0.0025$
$100\theta_{\text{MC}}$	1.04142	$1.04158 \pm 0.00066$	$\gamma^{\text{CIB}}$	0.528	$0.53^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.247765	$0.24786 \pm 0.00014$
$\tau$	0.0946	$0.102^{+0.015}_{-0.017}$	$c_{100}$	1.000591	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8363	$1.838 \pm 0.015$
$\Omega_K$	0.00054	$-0.0004 \pm 0.0036$	$c_{217}$	0.99637	$0.9965 \pm 0.0014$	Age/Gyr	13.771	$13.79 \pm 0.14$
$n_s$	0.9633	$0.9617 \pm 0.0087$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.611$	$z_*$	1090.17	$1089.85 \pm 0.61$
$dn_s/d \ln k$	-0.0033	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.76	$144.76 \pm 0.64$
$\ln(10^{10} A_s)$	3.0994	$3.116^{+0.030}_{-0.034}$	$\beta_1^1$	0.67	$0.64 \pm 0.57$	$100\theta_*$	1.04156	$1.04171 \pm 0.00064$
$r_{0.05}$	0.000	$< 0.135$	$\Omega_\Lambda$	0.6915	$0.693^{+0.012}_{-0.010}$	$z_{\text{drag}}$	1059.55	$1060.00 \pm 0.69$
$A_{100}^{\text{PS}}$	145	$183 \pm 60$	$\Omega_m$	0.3079	$0.307 \pm 0.011$	$r_{\text{drag}}$	147.49	$147.42 \pm 0.63$
$A_{143}^{\text{PS}}$	55.3	$55 \pm 10$	$\sigma_8$	0.8311	$0.830 \pm 0.015$	$k_{\text{D}}$	0.14021	$0.14044 \pm 0.00069$
$A_{217}^{\text{PS}}$	117.8	$103^{+20}_{-20}$	$z_{\text{re}}$	11.47	$12.0 \pm 1.2$	$100\theta_{\text{D}}$	0.161213	$0.16097 \pm 0.00038$
$A_{143}^{\text{CIB}}$	3.53	$< 12.2$	$H_0$	67.92	$67.9 \pm 1.1$	$z_{\text{eq}}$	3379	$3369 \pm 65$
$A_{217}^{\text{CIB}}$	27.3	$31^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.142$	$100\theta_{\text{eq}}$	0.8174	$0.820 \pm 0.013$
$A_{143}^{\text{tSZ}}$	8.23	—	$10^9 A_s$	2.219	$2.257^{+0.065}_{-0.080}$	$r_{\text{drag}}/D_V(0.57)$	0.07189	$0.07182 \pm 0.00079$

Best-fit  $\chi_{\text{eff}}^2 = 9806.48$ ; R-1 = 0.01376

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.36 DR7: 1.00 6DF: 0.02 CMB - lowLike: 2014.43 lowl: -7.92 CamSpec: 7797.84



## 15.4 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022094	$0.02249^{+0.00031}_{-0.00037}$	$A^{\text{ksZ}}$	2.58	$5.64^{+2.7}_{-1.8}$	$\sigma_8$	0.8344	$0.831 \pm 0.015$
$\Omega_c h^2$	0.12011	$0.1184 \pm 0.0028$	$\beta_1^1$	0.44	$0.53 \pm 0.56$	$z_{\text{re}}$	11.58	$12.3 \pm 1.3$
$100\theta_{\text{MC}}$	1.04120	$1.04162 \pm 0.00066$	$A_{148}^{\text{PS, ACT}}$	10.32	$10.49 \pm 0.59$	$H_0$	68.24	$67.9 \pm 1.0$
$\tau$	0.0951	$0.106^{+0.015}_{-0.018}$	$A_{218}^{\text{PS, ACT}}$	76.50	$76.7 \pm 4.5$	$r_{0.002}$	0.000	$< 0.144$
$\Omega_K$	0.00215	$-0.0008 \pm 0.0034$	$A_{95}^{\text{PS, SPT}}$	7.47	$7.59^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.271^{+0.066}_{-0.085}$
$n_s$	0.9584	$0.9608 \pm 0.0080$	$A_{150}^{\text{PS, SPT}}$	9.85	$10.01 \pm 0.51$	$\Omega_m h^2$	0.14285	$0.1415 \pm 0.0027$
$dn_s/d \ln k$	-0.0011	$-0.022^{+0.012}_{-0.010}$	$A_{220}^{\text{PS, SPT}}$	73.34	$74.2 \pm 4.5$	$\Omega_m h^3$	0.09749	$0.0961 \pm 0.0024$
$\ln(10^{10} A_s)$	3.0998	$3.122^{+0.030}_{-0.036}$	$r_{95 \times 150}^{\text{PS}}$	0.783	$0.832 \pm 0.090$	$Y_{\text{P}}$	0.247722	$0.24789^{+0.00013}_{-0.00016}$
$r_{0.05}$	0.000	$< 0.136$	$r_{95 \times 220}^{\text{PS}}$	0.540	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8349	$1.837 \pm 0.014$
$A_{100}^{\text{PS}}$	202	$224 \pm 50$	$r_{150 \times 220}^{\text{PS}}$	0.9141	$0.937 \pm 0.024$	Age/Gyr	13.713	$13.80 \pm 0.14$
$A_{143}^{\text{PS}}$	72.3	$77.1 \pm 8.5$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	$z_*$	1090.38	$1089.74 \pm 0.59$
$A_{217}^{\text{PS}}$	60.8	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.850	$0.85 \pm 0.20$	$r_*$	144.60	$144.76 \pm 0.63$
$A_{143}^{\text{CIB}}$	3.06	$3.23 \pm 0.82$	$y_{148}^{\text{ACTs}}$	0.9915	$0.9905 \pm 0.0074$	$100\theta_*$	1.04136	$1.04174 \pm 0.00064$
$A_{217}^{\text{CIB}}$	51.5	$49.3 \pm 5.0$	$y_{217}^{\text{ACTs}}$	1.0033	$1.004 \pm 0.013$	$z_{\text{drag}}$	1059.40	$1060.16 \pm 0.68$
$A_{143}^{\text{tSZ}}$	4.22	$2.38^{+1.0}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9877	$0.9865 \pm 0.0073$	$r_{\text{drag}}$	147.36	$147.39 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.813	$0.829 \pm 0.068$	$y_{217}^{\text{ACTe}}$	0.9618	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14027	$0.14053 \pm 0.00068$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{95}^{\text{SPT}}$	0.9840	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.161296	$0.16088 \pm 0.00038$
$\gamma^{\text{CIB}}$	0.652	$0.631 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9847	$0.9851 \pm 0.0098$	$z_{\text{eq}}$	3398	$3366 \pm 64$
$c_{100}$	1.000585	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0173	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8135	$0.821 \pm 0.012$
$c_{217}$	0.99740	$0.9974 \pm 0.0013$	$\Omega_{\Lambda}$	0.6911	$0.694 \pm 0.011$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07216	$0.07176 \pm 0.00079$
$\xi^{\text{tSZ-CIB}}$	0.026	$< 0.455$	$\Omega_{\text{m}}$	0.3067	$0.307 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.73$ ; R-1 = 0.01405

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.62 DR9: 0.69 6DF: 0.05 CMB - lowLike: 2014.51 lowl: -6.09 CamSpec: 7808.18 highL: 692.64

## 15.5 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022217	$0.02251^{+0.00032}_{-0.00038}$	$A^{\text{KSZ}}$	3.35	$5.71^{+2.7}_{-1.8}$	$\sigma_8$	0.8310	$0.834 \pm 0.016$
$\Omega_c h^2$	0.11940	$0.1185 \pm 0.0029$	$\beta_1^1$	0.45	$0.54 \pm 0.55$	$z_{\text{re}}$	11.53	$12.4 \pm 1.3$
$100\theta_{\text{MC}}$	1.04147	$1.04163 \pm 0.00066$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.49^{+0.57}_{-0.64}$	$H_0$	68.84	$68.83 \pm 0.98$
$\tau$	0.0952	$0.107^{+0.015}_{-0.019}$	$A_{218}^{\text{PS, ACT}}$	76.71	$76.7 \pm 4.5$	$r_{0.002}$	0.000	$< 0.144$
$\Omega_K$	0.00242	$0.0011 \pm 0.0033$	$A_{95}^{\text{PS, SPT}}$	7.43	$7.54^{+1.3}_{-1.6}$	$10^9 A_s$	2.218	$2.280^{+0.068}_{-0.087}$
$n_s$	0.9590	$0.9604 \pm 0.0082$	$A_{150}^{\text{PS, SPT}}$	9.934	$10.00 \pm 0.51$	$\Omega_m h^2$	0.14226	$0.1417 \pm 0.0027$
$dn_s/d \ln k$	-0.0049	$-0.0233^{+0.012}_{-0.0098}$	$A_{220}^{\text{PS, SPT}}$	73.71	$74.2 \pm 4.5$	$\Omega_m h^3$	0.09793	$0.0975 \pm 0.0023$
$\ln(10^{10} A_s)$	3.0994	$3.126^{+0.031}_{-0.037}$	$r_{95 \times 150}^{\text{PS}}$	0.794	$0.833^{+0.11}_{-0.091}$	$Y_{\text{P}}$	0.247774	$0.24790^{+0.00014}_{-0.00016}$
$r_{0.05}$	0.000	$< 0.136$	$r_{95 \times 220}^{\text{PS}}$	0.557	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8338	$1.838 \pm 0.014$
$A_{100}^{\text{PS}}$	211	$226^{+60}_{-50}$	$r_{150 \times 220}^{\text{PS}}$	0.9172	$0.938 \pm 0.023$	Age/Gyr	13.676	$13.70 \pm 0.13$
$A_{143}^{\text{PS}}$	74.3	$77.4 \pm 8.6$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44^{+0.19}_{-0.21}$	$z_*$	1090.16	$1089.72 \pm 0.60$
$A_{217}^{\text{PS}}$	61.5	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.69	$144.70 \pm 0.63$
$A_{143}^{\text{CIB}}$	3.06	$3.23 \pm 0.83$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9904 \pm 0.0074$	$100\theta_*$	1.04161	$1.04174 \pm 0.00065$
$A_{217}^{\text{CIB}}$	50.8	$49.2^{+4.8}_{-5.4}$	$y_{217}^{\text{ACTs}}$	1.0032	$1.004 \pm 0.014$	$z_{\text{drag}}$	1059.63	$1060.23^{+0.67}_{-0.74}$
$A_{143}^{\text{tSZ}}$	3.80	$2.36^{+0.98}_{-1.9}$	$y_{148}^{\text{ACTe}}$	0.9873	$0.9866 \pm 0.0074$	$r_{\text{drag}}$	147.41	$147.32 \pm 0.62$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.829 \pm 0.067$	$y_{217}^{\text{ACTe}}$	0.9617	$0.962 \pm 0.010$	$k_{\text{D}}$	0.14031	$0.14062 \pm 0.00068$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{95}^{\text{SPT}}$	0.9825	$0.981 \pm 0.020$	$100\theta_{\text{D}}$	0.161185	$0.16084 \pm 0.00038$
$\gamma^{\text{CIB}}$	0.641	$0.630 \pm 0.081$	$y_{150}^{\text{SPT}}$	0.9846	$0.9849 \pm 0.0098$	$z_{\text{eq}}$	3384	$3370 \pm 64$
$c_{100}$	1.000587	$1.00059 \pm 0.00040$	$y_{220}^{\text{SPT}}$	1.0176	$1.022 \pm 0.023$	$100\theta_{\text{eq}}$	0.8166	$0.820 \pm 0.012$
$c_{217}$	0.99737	$0.9974 \pm 0.0013$	$\Omega_{\Lambda}$	0.6974	$0.700 \pm 0.010$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07257	$0.07245 \pm 0.00074$
$\xi^{\text{tSZ-CIB}}$	0.085	$< 0.465$	$\Omega_{\text{m}}$	0.3002	$0.299 \pm 0.010$			

Best-fit  $\chi_{\text{eff}}^2 = 10514.19$ ; R-1 = 0.02736

$\chi_{\text{eff}}^2$ : BAO - DR9: 1.39 DR7: 0.15 6DF: 0.12 CMB - lowLike: 2014.38 lowl: -7.52 CamSpec: 7808.71 highL: 692.54 Hubble - HST: 4.26

## 15.6 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022147	$0.02241 \pm 0.00034$	$A_{143}^{\text{tSZ}}$	5.21	—	$\Omega_m h^2$	0.14241	$0.1414 \pm 0.0028$
$\Omega_c h^2$	0.11961	$0.1183 \pm 0.0029$	$r_{143 \times 217}^{\text{PS}}$	0.956	$> 0.838$	$\Omega_m h^3$	0.0956	$0.0984^{+0.0063}_{-0.0077}$
$100\theta_{\text{MC}}$	1.04129	$1.04160 \pm 0.00066$	$r_{143 \times 217}^{\text{CIB}}$	0.877	$0.50^{+0.27}_{-0.21}$	$Y_{\text{P}}$	0.247744	$0.24786 \pm 0.00015$
$\tau$	0.0942	$0.103^{+0.014}_{-0.018}$	$\gamma^{\text{CIB}}$	0.569	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8392	$1.837 \pm 0.015$
$\Omega_K$	-0.0007	$0.0017^{+0.011}_{-0.0084}$	$c_{100}$	1.000577	$1.00058 \pm 0.00040$	Age/Gyr	13.839	$13.65 \pm 0.44$
$n_s$	0.9645	$0.9621 \pm 0.0090$	$c_{217}$	0.99655	$0.9965 \pm 0.0014$	$z_*$	1090.27	$1089.83 \pm 0.61$
$dn_s/d \ln k$	-0.0013	$-0.021^{+0.012}_{-0.011}$	$\xi^{\text{tSZ-CIB}}$	0.427	$< 0.610$	$r_*$	144.69	$144.83 \pm 0.65$
$\ln(10^{10} A_s)$	3.1002	$3.117^{+0.029}_{-0.035}$	$A^{\text{kSZ}}$	0.6	—	$100\theta_*$	1.04144	$1.04173 \pm 0.00064$
$r_{0.05}$	0.000	$< 0.135$	$\beta_1^1$	0.74	$0.62 \pm 0.57$	$z_{\text{drag}}$	1059.47	$1059.99 \pm 0.69$
$\alpha_{\text{SNLS}}$	1.417	$1.43^{+0.10}_{-0.12}$	$\Omega_\Lambda$	0.6845	$0.703^{+0.030}_{-0.026}$	$r_{\text{drag}}$	147.43	$147.49 \pm 0.64$
$\beta_{\text{SNLS}}$	3.246	$3.26 \pm 0.11$	$\Omega_m$	0.3162	$0.295^{+0.034}_{-0.039}$	$k_{\text{D}}$	0.14023	$0.14037 \pm 0.00070$
$A_{100}^{\text{PS}}$	158	$183 \pm 60$	$\sigma_8$	0.8330	$0.830 \pm 0.017$	$100\theta_{\text{D}}$	0.161251	$0.16098 \pm 0.00039$
$A_{143}^{\text{PS}}$	65.7	$55 \pm 10$	$z_{\text{re}}$	11.45	$12.1^{+1.2}_{-1.4}$	$z_{\text{eq}}$	3387	$3362 \pm 66$
$A_{217}^{\text{PS}}$	120.2	$103^{+20}_{-20}$	$H_0$	67.11	$69.6^{+4.0}_{-4.9}$	$100\theta_{\text{eq}}$	0.8156	$0.821 \pm 0.013$
$A_{143}^{\text{CIB}}$	0.0	—	$r_{0.002}$	0.000	$< 0.142$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07128	$0.0731^{+0.0030}_{-0.0038}$
$A_{217}^{\text{CIB}}$	25.0	$32^{+7}_{-10}$	$10^9 A_s$	2.220	$2.259^{+0.064}_{-0.082}$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.02$ ; R-1 = 0.01535

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.54 lowl: -7.63 CamSpec: 7797.99 SN - SNLS: 424.70

## 15.7 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022181	$0.02245 \pm 0.00034$	$\mathcal{A}_{143}^{\text{tSZ}}$	6.15	—	$\Omega_m h^2$	0.14128	$0.1411 \pm 0.0027$
$\Omega_c h^2$	0.11845	$0.1180 \pm 0.0028$	$r_{143 \times 217}^{\text{PS}}$	0.900	$> 0.840$	$\Omega_m h^3$	0.09590	$0.0964 \pm 0.0025$
$100\theta_{\text{MC}}$	1.04136	$1.04167 \pm 0.00065$	$r_{143 \times 217}^{\text{CIB}}$	0.721	$0.49^{+0.26}_{-0.22}$	$Y_{\text{P}}$	0.247759	$0.24787 \pm 0.00014$
$\tau$	0.0957	$0.103^{+0.014}_{-0.017}$	$\gamma^{\text{CIB}}$	0.532	$0.54^{+0.14}_{-0.11}$	$10^9 A_{\text{s}} e^{-2\tau}$	1.8343	$1.836 \pm 0.015$
$\Omega_K$	-0.00003	$-0.0002 \pm 0.0035$	$c_{100}$	1.000606	$1.00057 \pm 0.00040$	Age/Gyr	13.798	$13.77 \pm 0.14$
$n_{\text{s}}$	0.9649	$0.9632 \pm 0.0086$	$c_{217}$	0.99645	$0.9965 \pm 0.0013$	$z_*$	1090.12	$1089.74 \pm 0.59$
$dn_{\text{s}}/d \ln k$	-0.0022	$-0.021^{+0.013}_{-0.011}$	$\xi^{\text{tSZ}-\text{CIB}}$	0.15	—	$r_*$	144.97	$144.89 \pm 0.64$
$\ln(10^{10} A_{\text{s}})$	3.1006	$3.116^{+0.028}_{-0.035}$	$\mathcal{A}^{\text{kSZ}}$	1.69	—	$100\theta_*$	1.04151	$1.04179 \pm 0.00063$
$r_{0.05}$	0.000	$< 0.141$	$\beta_1^1$	0.71	$0.62 \pm 0.57$	$z_{\text{drag}}$	1059.47	$1060.06 \pm 0.68$
$\alpha_{\text{SNLS}}$	1.419	$1.43 \pm 0.11$	$\Omega_{\Lambda}$	0.6934	$0.698 \pm 0.010$	$r_{\text{drag}}$	147.70	$147.54 \pm 0.63$
$\beta_{\text{SNLS}}$	3.248	$3.25 \pm 0.11$	$\Omega_{\text{m}}$	0.3066	$0.302 \pm 0.010$	$k_{\text{D}}$	0.13997	$0.14035 \pm 0.00069$
$A_{100}^{\text{PS}}$	149	$181 \pm 60$	$\sigma_8$	0.8293	$0.828 \pm 0.015$	$100\theta_{\text{D}}$	0.161250	$0.16094 \pm 0.00038$
$A_{143}^{\text{PS}}$	63.7	$55 \pm 10$	$z_{\text{re}}$	11.55	$12.0^{+1.1}_{-1.3}$	$z_{\text{eq}}$	3360	$3355 \pm 64$
$A_{217}^{\text{PS}}$	121.6	$103^{+20}_{-20}$	$H_0$	67.88	$68.3 \pm 1.0$	$100\theta_{\text{eq}}$	0.8206	$0.823 \pm 0.012$
$A_{143}^{\text{CIB}}$	0.0	$< 12.3$	$r_{0.002}$	0.000	$< 0.149$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07190	$0.07212 \pm 0.00078$
$A_{217}^{\text{CIB}}$	24.0	$31^{+7}_{-10}$	$10^9 A_{\text{s}}$	2.221	$2.257^{+0.060}_{-0.080}$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.68$ ; R-1 = 0.02524

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.96 6DF: 0.02 DR9: 0.37 CMB - lowLike: 2014.53 lowl: -7.84 CamSpec: 7798.11 SN - SNLS: 423.83

## 15.8 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022312	$0.02235 \pm 0.00033$	$A_{143}^{\text{tSZ}}$	5.54	—	$\Omega_m h^2$	0.14028	$0.1419 \pm 0.0027$
$\Omega_c h^2$	0.11733	$0.1189 \pm 0.0029$	$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.838$	$\Omega_m h^3$	0.09969	$0.1033 \pm 0.0038$
$100\theta_{\text{MC}}$	1.04174	$1.04153 \pm 0.00065$	$r_{143 \times 217}^{\text{CIB}}$	0.797	$0.51^{+0.27}_{-0.20}$	$Y_{\text{P}}$	0.247815	$0.24783 \pm 0.00014$
$\tau$	0.0971	$0.104^{+0.015}_{-0.017}$	$\gamma^{\text{CIB}}$	0.555	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8284	$1.839 \pm 0.015$
$\Omega_K$	0.00470	$0.0086^{+0.0050}_{-0.0042}$	$c_{100}$	1.000611	$1.00058 \pm 0.00040$	Age/Gyr	13.526	$13.32 \pm 0.22$
$n_s$	0.9694	$0.9604 \pm 0.0087$	$c_{217}$	0.99641	$0.9965 \pm 0.0014$	$z_*$	1089.86	$1089.95 \pm 0.58$
$dn_s/d \ln k$	-0.0011	$-0.022^{+0.012}_{-0.011}$	$\xi^{\text{tSZ-CIB}}$	0.217	$< 0.597$	$r_*$	145.16	$144.73 \pm 0.64$
$\ln(10^{10} A_s)$	3.1002	$3.120^{+0.030}_{-0.034}$	$A^{\text{kSZ}}$	1.14	—	$100\theta_*$	1.04187	$1.04166 \pm 0.00063$
$r_{0.05}$	0.000	$< 0.118$	$\beta_1^1$	0.64	$0.64 \pm 0.57$	$z_{\text{drag}}$	1059.70	$1059.88^{+0.64}_{-0.73}$
$\alpha_{\text{SNLS}}$	1.422	$1.43^{+0.10}_{-0.12}$	$\Omega_\Lambda$	0.7175	$0.723^{+0.016}_{-0.013}$	$r_{\text{drag}}$	147.86	$147.41 \pm 0.64$
$\beta_{\text{SNLS}}$	3.248	$3.26 \pm 0.11$	$\Omega_m$	0.2778	$0.268^{+0.015}_{-0.018}$	$k_{\text{D}}$	0.13991	$0.14041 \pm 0.00071$
$A_{100}^{\text{PS}}$	154	$187 \pm 60$	$\sigma_8$	0.8289	$0.837 \pm 0.016$	$100\theta_{\text{D}}$	0.161159	$0.16103 \pm 0.00038$
$A_{143}^{\text{PS}}$	64.5	$56 \pm 10$	$z_{\text{re}}$	11.62	$12.2 \pm 1.3$	$z_{\text{eq}}$	3337	$3374 \pm 64$
$A_{217}^{\text{PS}}$	118.8	$102^{+20}_{-20}$	$H_0$	71.06	$72.8 \pm 2.2$	$100\theta_{\text{eq}}$	0.8257	$0.819 \pm 0.012$
$A_{143}^{\text{CIB}}$	0.0	—	$r_{0.002}$	0.000	$< 0.123$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07431	$0.0756 \pm 0.0017$
$A_{217}^{\text{CIB}}$	25.1	$32^{+7}_{-10}$	$10^9 A_s$	2.220	$2.266^{+0.066}_{-0.080}$			

Best-fit  $\chi_{\text{eff}}^2 = 10231.52$ ; R-1 = 0.02902

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.22 lowl: -7.69 CamSpec: 7801.36 Hubble - HST: 1.34 SN - SNLS: 421.77

## 15.9 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022141	$0.02249 \pm 0.00035$	$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.842$	$\Omega_m h^2$	0.14289	$0.1411 \pm 0.0027$
$\Omega_c h^2$	0.12010	$0.1179 \pm 0.0029$	$r_{143 \times 217}^{\text{CIB}}$	0.273	$0.48^{+0.26}_{-0.22}$	$\Omega_m h^3$	0.0953	$0.0913^{+0.0063}_{-0.0072}$
$100\theta_{\text{MC}}$	1.04124	$1.04169 \pm 0.00066$	$\gamma^{\text{CIB}}$	0.534	$0.54 \pm 0.13$	$Y_{\text{P}}$	0.247742	$0.24789 \pm 0.00015$
$\tau$	0.0937	$0.101^{+0.014}_{-0.017}$	$c_{100}$	1.000591	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8398	$1.836 \pm 0.015$
$\Omega_K$	-0.0012	$-0.0096^{+0.013}_{-0.010}$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	Age/Gyr	13.866	$14.15 \pm 0.47$
$n_s$	0.9619	$0.9636 \pm 0.0090$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.32	$1089.70 \pm 0.63$
$dn_s/d \ln k$	-0.0007	$-0.021^{+0.012}_{-0.011}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.57	$144.87 \pm 0.65$
$\ln(10^{10} A_s)$	3.0997	$3.112^{+0.029}_{-0.034}$	$\beta_1^1$	0.67	$0.59 \pm 0.57$	$100\theta_*$	1.04139	$1.04180 \pm 0.00065$
$r_{0.05}$	0.000	$< 0.158$	$\Omega_\Lambda$	0.6798	$0.668^{+0.036}_{-0.031}$	$z_{\text{drag}}$	1059.47	$1060.13 \pm 0.71$
$A_{100}^{\text{PS}}$	146	$179 \pm 60$	$\Omega_m$	0.3213	$0.341^{+0.040}_{-0.047}$	$r_{\text{drag}}$	147.31	$147.50 \pm 0.64$
$A_{143}^{\text{PS}}$	58.2	$54 \pm 10$	$\sigma_8$	0.8334	$0.822 \pm 0.018$	$k_{\text{D}}$	0.14035	$0.14041 \pm 0.00070$
$A_{217}^{\text{PS}}$	120.5	$103^{+20}_{-20}$	$z_{\text{re}}$	11.43	$11.8^{+1.2}_{-1.3}$	$100\theta_{\text{D}}$	0.161236	$0.16090 \pm 0.00040$
$A_{143}^{\text{CIB}}$	2.32	$< 12.1$	$H_0$	66.68	$64.7^{+3.9}_{-4.6}$	$z_{\text{eq}}$	3399	$3356 \pm 66$
$A_{217}^{\text{CIB}}$	25.8	$31^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.169$	$100\theta_{\text{eq}}$	0.8135	$0.823 \pm 0.013$
$A_{143}^{\text{tSZ}}$	7.49	—	$10^9 A_s$	2.219	$2.248^{+0.062}_{-0.079}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07095	$0.0693^{+0.0030}_{-0.0036}$

Best-fit  $\chi_{\text{eff}}^2 = 9935.87$ ; R-1 = 0.01151

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.60 lowl: -7.00 CamSpec: 7796.82 SN - Union2.1: 130.76

### 15.10 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022174	$0.02241^{+0.00031}_{-0.00037}$	$r_{143 \times 217}^{\text{PS}}$	0.897	$> 0.838$	$\Omega_m h^2$	0.14192	$0.1416 \pm 0.0027$
$\Omega_c h^2$	0.11910	$0.1185 \pm 0.0028$	$r_{143 \times 217}^{\text{CIB}}$	0.213	$0.49^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09659	$0.0964 \pm 0.0024$
$100\theta_{\text{MC}}$	1.04142	$1.04160 \pm 0.00064$	$\gamma^{\text{CIB}}$	0.526	$0.54^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.247756	$0.24786^{+0.00013}_{-0.00016}$
$\tau$	0.0942	$0.102^{+0.014}_{-0.018}$	$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8363	$1.838 \pm 0.015$
$\Omega_K$	0.00077	$-0.0002 \pm 0.0035$	$c_{217}$	0.99643	$0.9965 \pm 0.0014$	Age/Gyr	13.761	$13.78 \pm 0.14$
$n_s$	0.9653	$0.9617 \pm 0.0085$	$\xi^{\text{tSZ-CIB}}$	0.09	—	$z_*$	1090.19	$1089.84 \pm 0.58$
$dn_s/d \ln k$	-0.0011	$-0.021 \pm 0.011$	$A^{\text{kSZ}}$	0.9	—	$r_*$	144.80	$144.78 \pm 0.64$
$\ln(10^{10} A_s)$	3.0987	$3.115^{+0.028}_{-0.034}$	$\beta_1^1$	0.72	$0.62 \pm 0.57$	$100\theta_*$	1.04157	$1.04173 \pm 0.00063$
$r_{0.05}$	0.000	$< 0.130$	$\Omega_\Lambda$	0.6928	$0.695 \pm 0.010$	$z_{\text{drag}}$	1059.47	$1060.00^{+0.64}_{-0.75}$
$A_{100}^{\text{PS}}$	143	$184 \pm 60$	$\Omega_m$	0.3064	$0.306 \pm 0.010$	$r_{\text{drag}}$	147.54	$147.44 \pm 0.64$
$A_{143}^{\text{PS}}$	62.2	$55 \pm 10$	$\sigma_8$	0.8317	$0.830 \pm 0.015$	$k_{\text{D}}$	0.14014	$0.14043 \pm 0.00071$
$A_{217}^{\text{PS}}$	123.0	$102^{+20}_{-20}$	$z_{\text{re}}$	11.44	$12.0^{+1.2}_{-1.3}$	$100\theta_{\text{D}}$	0.161248	$0.16097 \pm 0.00039$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	68.06	$68.1 \pm 1.0$	$z_{\text{eq}}$	3376	$3367 \pm 64$
$A_{217}^{\text{CIB}}$	23.6	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.136$	$100\theta_{\text{eq}}$	0.8179	$0.820 \pm 0.012$
$A_{143}^{\text{tSZ}}$	6.74	—	$10^9 A_s$	2.217	$2.255^{+0.061}_{-0.079}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07201	$0.07192 \pm 0.00078$

Best-fit  $\chi_{\text{eff}}^2 = 9937.28$ ; R-1 = 0.03101

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.79 6DF: 0.03 DR9: 0.50 CMB - lowLike: 2014.41 lowl: -7.56 CamSpec: 7798.05 SN - Union2.1: 130.32

### 15.11 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022208	$0.02236^{+0.00032}_{-0.00036}$	$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.836$	$\Omega_m h^2$	0.14194	$0.1420 \pm 0.0026$
$\Omega_c h^2$	0.11909	$0.1190 \pm 0.0028$	$r_{143 \times 217}^{\text{CIB}}$	0.373	$0.51^{+0.25}_{-0.19}$	$\Omega_m h^3$	0.10154	$0.1020 \pm 0.0038$
$100\theta_{\text{MC}}$	1.04150	$1.04153 \pm 0.00066$	$\gamma^{\text{CIB}}$	0.528	$0.53 \pm 0.13$	$Y_{\text{P}}$	0.247770	$0.24784 \pm 0.00014$
$\tau$	0.0946	$0.104^{+0.014}_{-0.018}$	$c_{100}$	1.000591	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8359	$1.840 \pm 0.014$
$\Omega_K$	0.00706	$0.0070^{+0.0053}_{-0.0043}$	$c_{217}$	0.99639	$0.9965 \pm 0.0014$	Age/Gyr	13.431	$13.41 \pm 0.22$
$n_s$	0.9626	$0.9599 \pm 0.0083$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.609$	$z_*$	1090.15	$1089.95 \pm 0.59$
$dn_s/d \ln k$	-0.0059	$-0.022^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	3.07	—	$r_*$	144.78	$144.68 \pm 0.62$
$\ln(10^{10} A_s)$	3.0993	$3.120^{+0.031}_{-0.035}$	$\beta_1^1$	0.70	$0.64^{+0.60}_{-0.54}$	$100\theta_*$	1.04164	$1.04166 \pm 0.00064$
$r_{0.05}$	0.000	$< 0.117$	$\Omega_\Lambda$	0.7156	$0.717 \pm 0.015$	$z_{\text{drag}}$	1059.59	$1059.93 \pm 0.69$
$A_{100}^{\text{PS}}$	142	$189 \pm 60$	$\Omega_m$	0.2773	$0.276^{+0.017}_{-0.019}$	$r_{\text{drag}}$	147.50	$147.35 \pm 0.62$
$A_{143}^{\text{PS}}$	51.8	$56 \pm 10$	$\sigma_8$	0.8331	$0.836 \pm 0.015$	$k_{\text{D}}$	0.14020	$0.14048 \pm 0.00070$
$A_{217}^{\text{PS}}$	114.4	$102^{+20}_{-20}$	$z_{\text{re}}$	11.49	$12.2 \pm 1.3$	$100\theta_{\text{D}}$	0.161212	$0.16101 \pm 0.00039$
$A_{143}^{\text{CIB}}$	3.27	—	$H_0$	71.54	$71.8 \pm 2.2$	$z_{\text{eq}}$	3376	$3379 \pm 62$
$A_{217}^{\text{CIB}}$	26.9	$33^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.122$	$100\theta_{\text{eq}}$	0.8180	$0.818 \pm 0.012$
$A_{143}^{\text{tSZ}}$	8.05	—	$10^9 A_s$	2.218	$2.266^{+0.067}_{-0.081}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07466	$0.0748 \pm 0.0017$

Best-fit  $\chi_{\text{eff}}^2 = 9937.86$ ; R-1 = 0.03211

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.00 lowl: -7.89 CamSpec: 7800.21 Hubble - HST: 0.92 SN - Union2.1: 129.89



## 15.12 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022269	$0.02234 \pm 0.00033$	$r_{143 \times 217}^{\text{PS}}$	0.915	$> 0.835$	$\Omega_m h^2$	0.14099	$0.1423 \pm 0.0027$
$\Omega_c h^2$	0.11807	$0.1193 \pm 0.0029$	$r_{143 \times 217}^{\text{CIB}}$	0.540	$0.51^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09869	$0.1022 \pm 0.0039$
$100\theta_{\text{MC}}$	1.04158	$1.04149 \pm 0.00066$	$\gamma^{\text{CIB}}$	0.530	$0.53^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.247797	$0.24783 \pm 0.00014$
$\tau$	0.0960	$0.103^{+0.015}_{-0.017}$	$c_{100}$	1.000599	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8330	$1.841 \pm 0.015$
$\Omega_K$	0.00349	$0.0072^{+0.0052}_{-0.0046}$	$c_{217}$	0.99643	$0.9965 \pm 0.0014$	Age/Gyr	13.604	$13.40 \pm 0.23$
$n_s$	0.9677	$0.9593 \pm 0.0087$	$\xi^{\text{tSZ-CIB}}$	0.217	$< 0.611$	$z_*$	1089.98	$1090.00 \pm 0.60$
$dn_s/d \ln k$	-0.0023	$-0.022^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	0.60	$> 3.91$	$r_*$	145.00	$144.64 \pm 0.64$
$\ln(10^{10} A_s)$	3.1005	$3.120^{+0.030}_{-0.034}$	$\beta_1^1$	0.72	$0.66 \pm 0.57$	$100\theta_*$	1.04173	$1.04162 \pm 0.00064$
$r_{0.05}$	0.000	$< 0.117$	$\Omega_\Lambda$	0.7088	$0.716^{+0.017}_{-0.015}$	$z_{\text{drag}}$	1059.63	$1059.90 \pm 0.67$
$A_{100}^{\text{PS}}$	150	$188 \pm 60$	$\Omega_m$	0.2878	$0.277^{+0.017}_{-0.021}$	$r_{\text{drag}}$	147.71	$147.31 \pm 0.63$
$A_{143}^{\text{PS}}$	64.1	$56 \pm 10$	$\sigma_8$	0.8304	$0.837 \pm 0.016$	$k_{\text{D}}$	0.14004	$0.14051 \pm 0.00069$
$A_{217}^{\text{PS}}$	123.7	$102^{+20}_{-20}$	$z_{\text{re}}$	11.55	$12.2 \pm 1.3$	$100\theta_{\text{D}}$	0.161172	$0.16103 \pm 0.00038$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	70.00	$71.8 \pm 2.3$	$z_{\text{eq}}$	3354	$3384 \pm 65$
$A_{217}^{\text{CIB}}$	23.5	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.122$	$100\theta_{\text{eq}}$	0.8223	$0.817 \pm 0.012$
$A_{143}^{\text{tSZ}}$	6.21	—	$10^9 A_s$	2.221	$2.265^{+0.065}_{-0.079}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07349	$0.0748 \pm 0.0018$

Best-fit  $\chi_{\text{eff}}^2 = 9809.54$ ; R-1 = 0.01544

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.26 lowl: -7.93 CamSpec: 7799.95 Hubble - HST: 2.53

### 15.13 base\_nrun\_r\_omegak\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022247	$0.02241 \pm 0.00034$	$r_{143 \times 217}^{\text{PS}}$	0.933	$> 0.838$	$\Omega_m h^2$	0.14170	$0.1420 \pm 0.0027$
$\Omega_c h^2$	0.11881	$0.1190 \pm 0.0029$	$r_{143 \times 217}^{\text{CIB}}$	0.519	$0.49^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09738	$0.0978 \pm 0.0024$
$100\theta_{\text{MC}}$	1.04156	$1.04156 \pm 0.00066$	$\gamma^{\text{CIB}}$	0.558	$0.53 \pm 0.13$	$Y_{\text{P}}$	0.247787	$0.24786 \pm 0.00015$
$\tau$	0.0951	$0.102^{+0.015}_{-0.017}$	$c_{100}$	1.000597	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8359	$1.840 \pm 0.015$
$\Omega_K$	0.00165	$0.0018 \pm 0.0034$	$c_{217}$	0.99640	$0.9965 \pm 0.0014$	Age/Gyr	13.705	$13.68 \pm 0.13$
$n_s$	0.9660	$0.9605 \pm 0.0087$	$\xi^{\text{tSZ-CIB}}$	0.216	$< 0.611$	$z_*$	1090.07	$1089.88 \pm 0.61$
$dn_s/d \ln k$	-0.0030	$-0.021^{+0.012}_{-0.010}$	$A^{\text{kSZ}}$	1.02	—	$r_*$	144.82	$144.66 \pm 0.63$
$\ln(10^{10} A_s)$	3.1004	$3.117^{+0.030}_{-0.034}$	$\beta_1^1$	0.71	$0.64 \pm 0.56$	$100\theta_*$	1.04170	$1.04168 \pm 0.00065$
$r_{0.05}$	0.000	$< 0.127$	$\Omega_\Lambda$	0.6983	$0.699 \pm 0.010$	$z_{\text{drag}}$	1059.63	$1060.03 \pm 0.69$
$A_{100}^{\text{PS}}$	146	$185 \pm 60$	$\Omega_m$	0.3001	$0.2995 \pm 0.0098$	$r_{\text{drag}}$	147.54	$147.32 \pm 0.62$
$A_{143}^{\text{PS}}$	62.5	$55 \pm 10$	$\sigma_8$	0.8315	$0.833 \pm 0.015$	$k_{\text{D}}$	0.14020	$0.14055 \pm 0.00068$
$A_{217}^{\text{PS}}$	121.3	$103^{+20}_{-20}$	$z_{\text{re}}$	11.50	$12.0 \pm 1.2$	$100\theta_{\text{D}}$	0.161174	$0.16095 \pm 0.00039$
$A_{143}^{\text{CIB}}$	0.0	—	$H_0$	68.72	$68.88 \pm 0.97$	$z_{\text{eq}}$	3371	$3378 \pm 64$
$A_{217}^{\text{CIB}}$	24.5	$32^{+7}_{-10}$	$r_{0.002}$	0.000	$< 0.133$	$100\theta_{\text{eq}}$	0.8191	$0.818 \pm 0.012$
$A_{143}^{\text{tSZ}}$	6.53	—	$10^9 A_s$	2.221	$2.260^{+0.065}_{-0.078}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07249	$0.07253 \pm 0.00074$

Best-fit  $\chi_{\text{eff}}^2 = 9811.94$ ; R-1 = 0.03910

$\chi_{\text{eff}}^2$ : BAO - DR9: 1.23 DR7: 0.21 6DF: 0.10 CMB - lowLike: 2014.36 lowl: -8.07 CamSpec: 7799.13 Hubble - HST: 4.47

## 16 omegak

### 16.1 base\_omegak\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022118	$0.02231 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.638	$0.39^{+0.17}_{-0.31}$	$\Omega_m h^3$	0.0898	$0.0795^{+0.0075}_{-0.0087}$
$\Omega_c h^2$	0.12043	$0.1183 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.613	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247732	$0.24781 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04126	$1.04159 \pm 0.00065$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8421	$1.831 \pm 0.013$
$\tau$	0.0919	$0.087^{+0.012}_{-0.014}$	$c_{217}$	0.99643	$0.9963 \pm 0.0014$	Age/Gyr	14.26	$15.09 \pm 0.67$
$\Omega_K$	-0.0105	$-0.037^{+0.028}_{-0.017}$	$\xi^{\text{tSZ-CIB}}$	0.18	—	$z_*$	1090.38	$1089.94 \pm 0.57$
$n_s$	0.9621	$0.9646 \pm 0.0075$	$A^{\text{kSZ}}$	0.58	$< 5.56$	$r_*$	144.50	$144.92 \pm 0.59$
$\ln(10^{10} A_s)$	3.0972	$3.081^{+0.024}_{-0.027}$	$\beta_1^1$	0.71	$0.46 \pm 0.57$	$100\theta_*$	1.04141	$1.04172 \pm 0.00064$
$A_{100}^{\text{PS}}$	150	$160 \pm 60$	$\Omega_\Lambda$	0.646	$0.580^{+0.075}_{-0.053}$	$z_{\text{drag}}$	1059.47	$1059.75 \pm 0.63$
$A_{143}^{\text{PS}}$	63.1	$51 \pm 10$	$\Omega_m$	0.364	$0.458^{+0.069}_{-0.10}$	$r_{\text{drag}}$	147.25	$147.61 \pm 0.58$
$A_{217}^{\text{PS}}$	115.6	$107^{+20}_{-10}$	$\sigma_8$	0.8284	$0.800^{+0.023}_{-0.019}$	$k_D$	0.14040	$0.14017 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.00	$< 9.51$	$z_{\text{re}}$	11.25	$10.6 \pm 1.1$	$100\theta_D$	0.161262	$0.16112 \pm 0.00035$
$A_{217}^{\text{CIB}}$	27.4	$27^{+6}_{-9}$	$H_0$	62.7	$56.3^{+5.1}_{-5.8}$	$z_{\text{eq}}$	3406	$3359 \pm 60$
$A_{143}^{\text{tSZ}}$	6.26	—	$10^9 A_s$	2.214	$2.179^{+0.051}_{-0.059}$	$100\theta_{\text{eq}}$	0.8122	$0.822 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.948	$> 0.853$	$\Omega_m h^2$	0.14319	$0.1412 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.06796	$0.0632^{+0.0037}_{-0.0044}$

Best-fit  $\chi_{\text{eff}}^2 = 9803.94$ ; R-1 = 0.00647

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2015.09 lowl: -7.59 CamSpec: 7796.26

## 16.2 base\_omegak\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022090	$0.02234 \pm 0.00030$	$\beta_1^1$	0.55	$0.30 \pm 0.56$	$\sigma_8$	0.8289	$0.795^{+0.022}_{-0.019}$
$\Omega_c h^2$	0.12099	$0.1180 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.32	$10.65 \pm 0.59$	$z_{\text{re}}$	11.40	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04115	$1.04163 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	76.33	$77.0 \pm 4.5$	$H_0$	62.3	$55.1^{+4.7}_{-5.5}$
$\tau$	0.0933	$0.087^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.40	$7.93^{+1.4}_{-1.7}$	$10^9 A_s$	2.218	$2.174^{+0.051}_{-0.060}$
$\Omega_K$	-0.0111	$-0.042^{+0.027}_{-0.018}$	$A_{150}^{\text{PS, SPT}}$	9.87	$10.26 \pm 0.52$	$\Omega_m h^2$	0.14373	$0.1410 \pm 0.0025$
$n_s$	0.9564	$0.9626 \pm 0.0071$	$A_{220}^{\text{PS, SPT}}$	73.03	$74.7 \pm 4.5$	$\Omega_m h^3$	0.0895	$0.0777^{+0.0070}_{-0.0081}$
$\ln(10^{10} A_s)$	3.0990	$3.079^{+0.024}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.793	$0.829 \pm 0.088$	$Y_P$	0.247720	$0.24783 \pm 0.00013$
$A_{100}^{\text{PS}}$	205	$206 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.548	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8401	$1.827 \pm 0.012$
$A_{143}^{\text{PS}}$	71.3	$69 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9106	$0.934 \pm 0.024$	Age/Gyr	14.30	$15.24 \pm 0.64$
$A_{217}^{\text{PS}}$	59.6	$56 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.408	$0.43 \pm 0.19$	$z_*$	1090.47	$1089.89 \pm 0.54$
$A_{143}^{\text{CIB}}$	3.18	$3.26 \pm 0.84$	$A_{\text{dust}}^{\text{ACTe}}$	0.839	$0.84 \pm 0.20$	$r_*$	144.38	$144.97 \pm 0.59$
$A_{217}^{\text{CIB}}$	52.4	$50.4 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9936 \pm 0.0073$	$100\theta_*$	1.04131	$1.04176 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.58	$2.61^{+1.3}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0053	$1.008 \pm 0.013$	$z_{\text{drag}}$	1059.44	$1059.79 \pm 0.60$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.815^{+0.074}_{-0.083}$	$y_{148}^{\text{ACTe}}$	0.9881	$0.9901 \pm 0.0072$	$r_{\text{drag}}$	147.13	$147.65 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.926$	$y_{217}^{\text{ACTe}}$	0.9623	$0.966 \pm 0.010$	$k_D$	0.14050	$0.14014 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.663	$0.652 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9855	$0.988 \pm 0.020$	$100\theta_D$	0.161268	$0.16110 \pm 0.00034$
$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9857	$0.9916 \pm 0.0098$	$z_{\text{eq}}$	3419	$3354 \pm 59$
$c_{217}$	0.99741	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0177	$1.028^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8097	$0.823 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.354$	$\Omega_\Lambda$	0.640	$0.567^{+0.073}_{-0.055}$	$r_{\text{drag}}/D_V(0.57)$	0.06762	$0.0623^{+0.0034}_{-0.0041}$
$A^{\text{kSZ}}$	1.68	$4.57^{+2.6}_{-2.2}$	$\Omega_m$	0.371	$0.476^{+0.072}_{-0.10}$			

Best-fit  $\chi_{\text{eff}}^2 = 10506.95$ ; R-1 =0.00774

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2015.30 lowl: -6.43 CamSpec: 7806.59 highL: 691.42

### 16.3 base\_omegak\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022177	$0.02222 \pm 0.00030$	$\beta_1^1$	0.42	$0.35^{+0.56}_{-0.50}$	$\sigma_8$	0.8299	$0.822 \pm 0.015$
$\Omega_c h^2$	0.11892	$0.1180 \pm 0.0029$	$A_{148}^{\text{PS, ACT}}$	10.35	$10.55 \pm 0.58$	$z_{\text{re}}$	11.67	$11.3 \pm 1.2$
$100\theta_{\text{MC}}$	1.04140	$1.04155^{+0.00061}_{-0.00071}$	$A_{218}^{\text{PS, ACT}}$	76.53	$76.9^{+4.9}_{-3.7}$	$H_0$	67.37	$67.4^{+3.3}_{-3.8}$
$\tau$	0.0970	$0.094^{+0.013}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.43	$7.62^{+1.2}_{-1.6}$	$10^9 A_s$	2.221	$2.203^{+0.051}_{-0.070}$
$\Omega_K$	-0.0008	$-0.0023^{+0.0091}_{-0.0073}$	$A_{150}^{\text{PS, SPT}}$	9.87	$10.13 \pm 0.50$	$\Omega_m h^2$	0.14174	$0.1408 \pm 0.0027$
$n_s$	0.9613	$0.9628 \pm 0.0076$	$A_{220}^{\text{PS, SPT}}$	73.21	$74.6 \pm 4.6$	$\Omega_m h^3$	0.0955	$0.0949^{+0.0051}_{-0.0057}$
$\ln(10^{10} A_s)$	3.1004	$3.092^{+0.024}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.782	$0.830^{+0.099}_{-0.089}$	$Y_P$	0.247757	$0.24777 \pm 0.00013$
$A_{100}^{\text{PS}}$	203	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.531	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8293	$1.825 \pm 0.013$
$A_{143}^{\text{PS}}$	71.8	$72.1 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9114	$0.938 \pm 0.024$	Age/Gyr	13.834	$13.87 \pm 0.37$
$A_{217}^{\text{PS}}$	60.0	$58^{+10}_{-9}$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43^{+0.20}_{-0.18}$	$z_*$	1090.17	$1090.04^{+0.53}_{-0.63}$
$A_{143}^{\text{CIB}}$	3.02	$3.18 \pm 0.86$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.85 \pm 0.20$	$r_*$	144.85	$145.07 \pm 0.63$
$A_{217}^{\text{CIB}}$	51.80	$49.5^{+4.4}_{-5.1}$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9926^{+0.0079}_{-0.0066}$	$100\theta_*$	1.04155	$1.04170^{+0.00060}_{-0.00070}$
$A_{143}^{\text{tSZ}}$	4.33	$2.47^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0040	$1.006 \pm 0.012$	$z_{\text{drag}}$	1059.47	$1059.51 \pm 0.58$
$r_{143 \times 217}^{\text{PS}}$	0.811	$0.823 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9893 \pm 0.0066$	$r_{\text{drag}}$	147.59	$147.80 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9624	$0.9644^{+0.0091}_{-0.011}$	$k_D$	0.14010	$0.13990 \pm 0.00063$
$\gamma^{\text{CIB}}$	0.656	$0.638 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9841	$0.987^{+0.019}_{-0.021}$	$100\theta_D$	0.161246	$0.16125 \pm 0.00033$
$c_{100}$	1.000575	$1.00063 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9855	$0.989 \pm 0.010$	$z_{\text{eq}}$	3372	$3349 \pm 64$
$c_{217}$	0.99741	$0.9974^{+0.0013}_{-0.0012}$	$y_{220}^{\text{SPT}}$	1.0157	$1.027^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8187	$0.823 \pm 0.013$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.430$	$\Omega_\Lambda$	0.6885	$0.690 \pm 0.026$	$r_{\text{drag}}/D_V(0.57)$	0.07149	$0.0716^{+0.0025}_{-0.0028}$
$A^{\text{kSZ}}$	2.23	$5.46^{+2.7}_{-1.6}$	$\Omega_m$	0.3123	$0.312 \pm 0.033$			

Best-fit  $\chi_{\text{eff}}^2 = 10938.46$ ; R-1 =0.25250

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.77 lowl: -6.57 CamSpec: 7808.29 highL: 692.27 SN - SNLS: 429.58

## 16.4 base\_omegak\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022105	$0.02224 \pm 0.00029$	$\beta_1^1$	0.46	$0.33 \pm 0.56$	$\sigma_8$	0.8259	$0.816 \pm 0.016$
$\Omega_c h^2$	0.11928	$0.1181 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.34	$10.58 \pm 0.59$	$z_{\text{re}}$	11.55	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04122	$1.04156 \pm 0.00066$	$A_{218}^{\text{PS, ACT}}$	76.20	$76.9 \pm 4.4$	$H_0$	63.71	$63.4^{+3.6}_{-4.1}$
$\tau$	0.0956	$0.092^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.46	$7.75^{+1.3}_{-1.7}$	$10^9 A_s$	2.217	$2.196^{+0.052}_{-0.063}$
$\Omega_K$	-0.0087	$-0.0118^{+0.013}_{-0.0090}$	$A_{150}^{\text{PS, SPT}}$	9.87	$10.16 \pm 0.51$	$\Omega_m h^2$	0.14203	$0.1410^{+0.0025}_{-0.0028}$
$n_s$	0.9605	$0.9624 \pm 0.0071$	$A_{220}^{\text{PS, SPT}}$	72.95	$74.6 \pm 4.6$	$\Omega_m h^3$	0.0905	$0.0895 \pm 0.0057$
$\ln(10^{10} A_s)$	3.0987	$3.089^{+0.024}_{-0.028}$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.830 \pm 0.089$	$Y_P$	0.247726	$0.24779 \pm 0.00013$
$A_{100}^{\text{PS}}$	200	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.541	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8312	$1.826 \pm 0.013$
$A_{143}^{\text{PS}}$	71.6	$71.4 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9109	$0.936 \pm 0.024$	Age/Gyr	14.196	$14.27 \pm 0.42$
$A_{217}^{\text{PS}}$	59.8	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.412	$0.43 \pm 0.19$	$z_*$	1090.29	$1090.02 \pm 0.55$
$A_{143}^{\text{CIB}}$	3.14	$3.23 \pm 0.86$	$A_{\text{dust}}^{\text{ACTe}}$	0.852	$0.84 \pm 0.20$	$r_*$	144.81	$145.01 \pm 0.60$
$A_{217}^{\text{CIB}}$	52.31	$49.9 \pm 4.9$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9926 \pm 0.0072$	$100\theta_*$	1.04138	$1.04170 \pm 0.00065$
$A_{143}^{\text{tSZ}}$	4.55	$2.53^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.007^{+0.012}_{-0.014}$	$z_{\text{drag}}$	1059.36	$1059.58 \pm 0.59$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.820 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9893 \pm 0.0070$	$r_{\text{drag}}$	147.57	$147.73 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9619	$0.965 \pm 0.010$	$k_D$	0.14006	$0.13999 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.662	$0.642 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9840	$0.986 \pm 0.020$	$100\theta_D$	0.161310	$0.16121 \pm 0.00034$
$c_{100}$	1.000580	$1.00060 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9856	$0.9896 \pm 0.0098$	$z_{\text{eq}}$	3378	$3354^{+59}_{-66}$
$c_{217}$	0.99737	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0167	$1.027^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8171	$0.822 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.001	$< 0.391$	$\Omega_\Lambda$	0.6588	$0.658^{+0.035}_{-0.029}$	$r_{\text{drag}}/D_V(0.57)$	0.06874	$0.0685^{+0.0027}_{-0.0032}$
$A^{\text{kSZ}}$	1.80	$5.12^{+2.7}_{-1.9}$	$\Omega_m$	0.3499	$0.354^{+0.037}_{-0.046}$			

Best-fit  $\chi_{\text{eff}}^2 = 10638.91$ ; R-1 =0.04315

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2015.20 lowl: -7.15 CamSpec: 7807.09 highL: 691.74 SN - Union2.1: 131.92

## 16.5 base\_omegak\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022196	$0.02234 \pm 0.00034$	$r_{143 \times 217}^{\text{CIB}}$	0.619	$0.38^{+0.18}_{-0.30}$	$\Omega_m h^3$	0.0881	$0.0706^{+0.0081}_{-0.0097}$
$\Omega_c h^2$	0.11942	$0.1184 \pm 0.0029$	$\gamma^{\text{CIB}}$	0.529	$0.53 \pm 0.12$	$Y_P$	0.247765	$0.24783 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04141	$1.04159 \pm 0.00067$	$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8377	$1.832 \pm 0.014$
$\tau$	0.0938	$< 0.0744$	$c_{217}$	0.99637	$0.9963 \pm 0.0014$	Age/Gyr	14.38	$15.91 \pm 0.84$
$\Omega_K$	-0.0136	$-0.072^{+0.047}_{-0.027}$	$\xi^{\text{tSZ-CIB}}$	0.42	—	$z_*$	1090.19	$1089.92 \pm 0.63$
$n_s$	0.9650	$0.9641^{+0.0081}_{-0.0093}$	$A^{\text{kSZ}}$	0.65	$< 5.40$	$r_*$	144.70	$144.88 \pm 0.62$
$\ln(10^{10} A_s)$	3.099	$3.028^{+0.042}_{-0.097}$	$\beta_1^1$	0.63	$0.46 \pm 0.57$	$100\theta_*$	1.04155	$1.04172 \pm 0.00066$
$A_{100}^{\text{PS}}$	149	$160 \pm 60$	$\Omega_\Lambda$	0.643	$0.480^{+0.13}_{-0.085}$	$z_{\text{drag}}$	1059.55	$1059.82 \pm 0.66$
$A_{143}^{\text{PS}}$	63.8	$50 \pm 10$	$\Omega_m$	0.371	$0.59^{+0.11}_{-0.18}$	$r_{\text{drag}}$	147.43	$147.56 \pm 0.60$
$A_{217}^{\text{PS}}$	123.0	$107^{+20}_{-10}$	$\sigma_8$	0.8245	$0.761^{+0.040}_{-0.047}$	$k_D$	0.14027	$0.14024 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.00	$< 9.61$	$z_{\text{re}}$	11.36	$< 9.46$	$100\theta_D$	0.161204	$0.16108 \pm 0.00037$
$A_{217}^{\text{CIB}}$	23.1	$27^{+6}_{-9}$	$H_0$	61.9	$50^{+6}_{-7}$	$z_{\text{eq}}$	3384	$3362 \pm 65$
$A^{\text{tSZ}}_{143}$	5.53	—	$10^9 A_s$	2.217	$2.072^{+0.079}_{-0.20}$	$100\theta_{\text{eq}}$	0.8165	$0.821 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.938	$> 0.852$	$\Omega_m h^2$	0.14226	$0.1413 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.06737	$0.0586^{+0.0039}_{-0.0050}$

Best-fit  $\chi^2_{\text{eff}} = 7787.76$ ; R-1 = 0.00644

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.25 CamSpec: 7795.28

## 16.6 base\_omegak\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022260	$0.02224 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.658	$0.43^{+0.23}_{-0.26}$	$\Omega_m h^3$	0.0952	$0.0864^{+0.0060}_{-0.0076}$
$\Omega_c h^2$	0.11767	$0.1179 \pm 0.0029$	$\gamma^{\text{CIB}}$	0.549	$0.52 \pm 0.12$	$Y_P$	0.247793	$0.24778 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04147	$1.04150^{+0.00063}_{-0.00073}$	$c_{100}$	1.000586	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8292	$1.828 \pm 0.014$
$\tau$	0.0959	$< 0.0691$	$c_{217}$	0.99633	$0.9963 \pm 0.0014$	Age/Gyr	13.84	$14.51 \pm 0.51$
$\Omega_K$	-0.0012	$-0.018^{+0.016}_{-0.012}$	$\xi^{\text{tSZ-CIB}}$	0.162	$< 0.641$	$z_*$	1089.95	$1090.01^{+0.58}_{-0.66}$
$n_s$	0.9688	$0.9634 \pm 0.0086$	$A^{\text{kSZ}}$	0.7	—	$r_*$	145.11	$145.07 \pm 0.63$
$\ln(10^{10} A_s)$	3.098	$3.017^{+0.037}_{-0.088}$	$\beta_1^1$	0.63	$0.43 \pm 0.56$	$100\theta_*$	1.04161	$1.04164^{+0.00063}_{-0.00071}$
$A_{100}^{\text{PS}}$	144	$168 \pm 60$	$\Omega_\Lambda$	0.6945	$0.638 \pm 0.044$	$z_{\text{drag}}$	1059.59	$1059.56^{+0.69}_{-0.62}$
$A_{143}^{\text{PS}}$	61.6	$51 \pm 10$	$\Omega_m$	0.307	$0.381 \pm 0.057$	$r_{\text{drag}}$	147.83	$147.79^{+0.57}_{-0.69}$
$A_{217}^{\text{PS}}$	119.8	$104^{+20}_{-10}$	$\sigma_8$	0.8267	$0.784^{+0.024}_{-0.039}$	$k_D$	0.13991	$0.13993^{+0.00070}_{-0.00056}$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$z_{\text{re}}$	11.52	$< 9.13$	$100\theta_D$	0.161180	$0.16121^{+0.00034}_{-0.00038}$
$A_{217}^{\text{CIB}}$	24.4	$29^{+5}_{-9}$	$H_0$	67.70	$61.3^{+3.9}_{-5.5}$	$z_{\text{eq}}$	3344	$3349 \pm 65$
$A^{\text{tSZ}}_{143}$	6.43	—	$10^9 A_s$	2.216	$2.048^{+0.071}_{-0.18}$	$100\theta_{\text{eq}}$	0.8240	$0.823 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.914	$0.874^{+0.12}_{-0.040}$	$\Omega_m h^2$	0.14057	$0.1408 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07175	$0.0670^{+0.0029}_{-0.0042}$

Best-fit  $\chi^2_{\text{eff}} = 7801.06$ ; R-1 = 0.10491

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.88 lowl: -7.95 CamSpec: 7798.55



## 16.7 base\_omegak\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02268	$0.02260 \pm 0.00053$	$\sigma_8$	0.8138	$0.795^{+0.035}_{-0.025}$	$r_*$	145.66	$145.8 \pm 1.2$
$\Omega_c h^2$	0.11435	$0.1142 \pm 0.0047$	$z_{\text{re}}$	10.85	$10.6 \pm 1.2$	$100\theta_*$	1.04066	$1.0402 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04056	$1.0401 \pm 0.0023$	$H_0$	68.8	$64 \pm 10$	$z_{\text{drag}}$	1060.31	$1060.1 \pm 1.2$
$\tau$	0.0907	$0.088^{+0.013}_{-0.015}$	$10^9 A_s$	2.219	$2.203^{+0.065}_{-0.073}$	$r_{\text{drag}}$	148.25	$148.4 \pm 1.2$
$\Omega_K$	-0.0013	$-0.027^{+0.052}_{-0.010}$	$\Omega_m h^2$	0.13768	$0.1375 \pm 0.0045$	$k_D$	0.13977	$0.1396 \pm 0.0014$
$n_s$	0.9744	$0.972 \pm 0.014$	$\Omega_m h^3$	0.0948	$0.088 \pm 0.018$	$100\theta_D$	0.16058	$0.16064 \pm 0.00053$
$\ln(10^{10} A_s)$	3.0997	$3.092 \pm 0.031$	$Y_P$	0.247971	$0.24794 \pm 0.00022$	$z_{\text{eq}}$	3274	$3269 \pm 110$
$A_{\text{tSZ}}$	0.65	—	$10^9 A_s e^{-2\tau}$	1.8509	$1.846 \pm 0.031$	$100\theta_{\text{eq}}$	0.8375	$0.839 \pm 0.022$
$\Omega_\Lambda$	0.711	$0.636^{+0.17}_{-0.051}$	Age/Gyr	13.82	$14.4^{+1.1}_{-1.7}$	$r_{\text{drag}}/D_V(0.57)$	0.0726	$0.069 \pm 0.010$
$\Omega_m$	0.291	$0.391^{+0.057}_{-0.22}$	$z_*$	1089.14	$1089.24 \pm 0.87$			

Best-fit  $\chi^2_{\text{eff}} = 7558.18$ ; R-1 = 0.00842

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.18

## 16.8 base\_omegak\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022642	$0.02265 \pm 0.00047$	$\sigma_8$	0.8063	$0.806 \pm 0.024$	$r_*$	146.10	$145.9 \pm 1.1$
$\Omega_c h^2$	0.11284	$0.1135 \pm 0.0042$	$z_{\text{re}}$	10.93	$10.7 \pm 1.1$	$100\theta_*$	1.04017	$1.0403 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04007	$1.0402 \pm 0.0022$	$H_0$	67.84	$68.1 \pm 1.1$	$z_{\text{drag}}$	1060.12	$1060.2 \pm 1.1$
$\tau$	0.0921	$0.089^{+0.014}_{-0.015}$	$10^9 A_s$	2.215	$2.203 \pm 0.068$	$r_{\text{drag}}$	148.71	$148.5 \pm 1.2$
$\Omega_K$	-0.00404	$-0.0033 \pm 0.0043$	$\Omega_m h^2$	0.13612	$0.1368 \pm 0.0042$	$k_D$	0.13927	$0.1395 \pm 0.0014$
$n_s$	0.9757	$0.974 \pm 0.012$	$\Omega_m h^3$	0.09235	$0.0931 \pm 0.0035$	$100\theta_D$	0.16061	$0.16061^{+0.00048}_{-0.00054}$
$\ln(10^{10} A_s)$	3.0979	$3.092 \pm 0.031$	$Y_P$	0.247955	$0.24796 \pm 0.00020$	$z_{\text{eq}}$	3237	$3253 \pm 100$
$A_{\text{tSZ}}$	0.10	—	$10^9 A_s e^{-2\tau}$	1.8424	$1.843 \pm 0.030$	$100\theta_{\text{eq}}$	0.8442	$0.842^{+0.018}_{-0.022}$
$\Omega_\Lambda$	0.7083	$0.708 \pm 0.013$	Age/Gyr	13.963	$13.92 \pm 0.19$	$r_{\text{drag}}/D_V(0.57)$	0.07187	$0.07201 \pm 0.00079$
$\Omega_m$	0.2957	$0.295 \pm 0.012$	$z_*$	1089.06	$1089.11 \pm 0.73$			

Best-fit  $\chi^2_{\text{eff}} = 7559.45$ ; R-1 = 0.02268

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.01 DR7: 0.77 DR9: 0.34 CMB - WMAP: 7558.34

## 16.9 base\_omegak\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022806	$0.02276 \pm 0.00048$	$\sigma_8$	0.8124	$0.809 \pm 0.025$	$r_*$	145.97	$146.0 \pm 1.2$
$\Omega_c h^2$	0.11283	$0.1130 \pm 0.0044$	$z_{\text{re}}$	11.19	$10.7 \pm 1.1$	$100\theta_*$	1.04063	$1.0406 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04055	$1.0405 \pm 0.0022$	$H_0$	73.74	$73.6 \pm 2.4$	$z_{\text{drag}}$	1060.51	$1060.4 \pm 1.1$
$\tau$	0.0952	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.225	$2.206^{+0.065}_{-0.076}$	$r_{\text{drag}}$	148.52	$148.6 \pm 1.2$
$\Omega_K$	0.00598	$0.0057 \pm 0.0049$	$\Omega_m h^2$	0.13628	$0.1364 \pm 0.0043$	$k_D$	0.13958	$0.1395^{+0.0015}_{-0.0013}$
$n_s$	0.9772	$0.977 \pm 0.012$	$\Omega_m h^3$	0.10049	$0.1003 \pm 0.0043$	$100\theta_D$	0.16046	$0.16054 \pm 0.00051$
$\ln(10^{10} A_s)$	3.1024	$3.093 \pm 0.031$	$Y_P$	0.248024	$0.24800 \pm 0.00020$	$z_{\text{eq}}$	3241	$3243 \pm 100$
$A_{\text{tSZ}}$	1.47	—	$10^9 A_s e^{-2\tau}$	1.8394	$1.842 \pm 0.031$	$100\theta_{\text{eq}}$	0.8443	$0.844 \pm 0.020$
$\Omega_\Lambda$	0.7434	$0.742^{+0.019}_{-0.017}$	Age/Gyr	13.400	$13.42 \pm 0.24$	$r_{\text{drag}}/D_V(0.57)$	0.07635	$0.0763 \pm 0.0019$
$\Omega_m$	0.2506	$0.253^{+0.017}_{-0.021}$	$z_*$	1088.86	$1088.94 \pm 0.75$			

Best-fit  $\chi^2_{\text{eff}} = 7558.56$ ; R-1 = 0.01620

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.55 Hubble - HST: 0.00

## 16.10 base\_omegak\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022775	$0.02282 \pm 0.00050$	$\sigma_8$	0.8159	$0.807 \pm 0.025$	$r_*$	145.88	$146.1 \pm 1.1$
$\Omega_c h^2$	0.11327	$0.1122 \pm 0.0042$	$z_{\text{re}}$	10.93	$10.8 \pm 1.1$	$100\theta_*$	1.04085	$1.0407 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04076	$1.0407 \pm 0.0022$	$H_0$	77.0	$76.7^{+5.5}_{-6.8}$	$z_{\text{drag}}$	1060.47	$1060.5 \pm 1.1$
$\tau$	0.0915	$0.091 \pm 0.014$	$10^9 A_s$	2.220	$2.205^{+0.065}_{-0.075}$	$r_{\text{drag}}$	148.44	$148.7 \pm 1.2$
$\Omega_K$	0.0108	$0.0086^{+0.010}_{-0.0074}$	$\Omega_m h^2$	0.13669	$0.1357 \pm 0.0041$	$k_D$	0.13965	$0.1394 \pm 0.0014$
$n_s$	0.9792	$0.979 \pm 0.012$	$\Omega_m h^3$	0.1052	$0.1040^{+0.0081}_{-0.0099}$	$100\theta_D$	0.16052	$0.16051 \pm 0.00051$
$\ln(10^{10} A_s)$	3.1002	$3.093 \pm 0.031$	$Y_P$	0.248011	$0.24803 \pm 0.00021$	$z_{\text{eq}}$	3251	$3226 \pm 98$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8491	$1.838 \pm 0.030$	$100\theta_{\text{eq}}$	0.8425	$0.848 \pm 0.020$
$\Omega_\Lambda$	0.7586	$0.756^{+0.033}_{-0.029}$	Age/Gyr	13.10	$13.18 \pm 0.54$	$r_{\text{drag}}/D_V(0.57)$	0.07889	$0.0787^{+0.0042}_{-0.0054}$
$\Omega_m$	0.2306	$0.235^{+0.035}_{-0.041}$	$z_*$	1088.93	$1088.80 \pm 0.75$			

Best-fit  $\chi^2_{\text{eff}} = 7983.55$ ; R-1 = 0.01394

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.22 SN - SNLS: 425.33

### 16.11 base\_omegak\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022727	$0.02270 \pm 0.00048$	$\sigma_8$	0.8127	$0.807 \pm 0.025$	$r_*$	145.75	$146.0 \pm 1.1$
$\Omega_c h^2$	0.11388	$0.1133 \pm 0.0042$	$z_{\text{re}}$	10.91	$10.7 \pm 1.1$	$100\theta_*$	1.04059	$1.0405 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04048	$1.0404 \pm 0.0022$	$H_0$	69.5	$70.5^{+5.1}_{-6.7}$	$z_{\text{drag}}$	1060.39	$1060.3 \pm 1.1$
$\tau$	0.0917	$0.090^{+0.013}_{-0.015}$	$10^9 A_s$	2.220	$2.205^{+0.065}_{-0.075}$	$r_{\text{drag}}$	148.33	$148.5 \pm 1.2$
$\Omega_K$	-0.0005	$-0.0003^{+0.013}_{-0.0094}$	$\Omega_m h^2$	0.13725	$0.1366 \pm 0.0042$	$k_D$	0.13973	$0.1395 \pm 0.0014$
$n_s$	0.9757	$0.975 \pm 0.012$	$\Omega_m h^3$	0.0953	$0.0964^{+0.0076}_{-0.0096}$	$100\theta_D$	0.16052	$0.16058 \pm 0.00051$
$\ln(10^{10} A_s)$	3.1000	$3.093 \pm 0.031$	$Y_P$	0.247991	$0.24798 \pm 0.00020$	$z_{\text{eq}}$	3264	$3249 \pm 99$
$A_{\text{tSZ}}$	0.81	—	$10^9 A_s e^{-2\tau}$	1.8480	$1.842 \pm 0.030$	$100\theta_{\text{eq}}$	0.8396	$0.843 \pm 0.020$
$\Omega_\Lambda$	0.7160	$0.720^{+0.041}_{-0.035}$	Age/Gyr	13.77	$13.71 \pm 0.57$	$r_{\text{drag}}/D_V(0.57)$	0.07302	$0.0739^{+0.0039}_{-0.0052}$
$\Omega_m$	0.2846	$0.280^{+0.043}_{-0.052}$	$z_*$	1089.04	$1089.03 \pm 0.75$			

Best-fit  $\chi^2_{\text{eff}} = 7688.16$ ; R-1 = 0.01021

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.24 SN - Union2.1: 129.92

## 16.12 base\_omegak\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022111	$0.02212 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.591	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09592	$0.0960 \pm 0.0023$
$\Omega_c h^2$	0.11978	$0.1188 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.577	$0.53 \pm 0.12$	$Y_P$	0.247729	$0.24773 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04118	$1.04144 \pm 0.00065$	$c_{100}$	1.000596	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8385	$1.831 \pm 0.013$
$\tau$	0.0930	$0.091 \pm 0.013$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	Age/Gyr	13.816	$13.80 \pm 0.13$
$\Omega_K$	-0.00003	$0.0000 \pm 0.0034$	$\xi^{\text{tSZ-CIB}}$	0.12	—	$z_*$	1090.33	$1090.24 \pm 0.55$
$n_s$	0.9624	$0.9627 \pm 0.0074$	$A^{\text{kSZ}}$	0.42	$< 6.08$	$r_*$	144.68	$144.92 \pm 0.60$
$\ln(10^{10} A_s)$	3.0975	$3.090 \pm 0.026$	$\beta_1^1$	0.69	$0.51 \pm 0.57$	$100\theta_*$	1.04133	$1.04159 \pm 0.00063$
$A_{100}^{\text{PS}}$	151	$170 \pm 60$	$\Omega_\Lambda$	0.6853	$0.691^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1059.40	$1059.35 \pm 0.60$
$A_{143}^{\text{PS}}$	65.5	$53 \pm 10$	$\Omega_m$	0.3147	$0.309^{+0.010}_{-0.011}$	$r_{\text{drag}}$	147.43	$147.67 \pm 0.59$
$A_{217}^{\text{PS}}$	120.5	$106^{+20}_{-10}$	$\sigma_8$	0.8324	$0.826 \pm 0.014$	$k_D$	0.14021	$0.13996 \pm 0.00063$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$z_{\text{re}}$	11.37	$11.2 \pm 1.1$	$100\theta_D$	0.161278	$0.16134 \pm 0.00034$
$A_{217}^{\text{CIB}}$	25.8	$29^{+6}_{-9}$	$H_0$	67.30	$67.8 \pm 1.0$	$z_{\text{eq}}$	3390	$3368 \pm 61$
$A_{143}^{\text{tSZ}}$	6.56	—	$10^9 A_s$	2.214	$2.198^{+0.054}_{-0.061}$	$100\theta_{\text{eq}}$	0.8149	$0.819 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.921	$> 0.849$	$\Omega_m h^2$	0.14253	$0.1416 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07144	$0.07183 \pm 0.00080$

Best-fit  $\chi^2_{\text{eff}} = 9807.66$ ; R-1 = 0.00682

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.05 DR7: 2.01 6DF: 0.00 CMB - lowLike: 2014.46 lowl: -6.82 CamSpec: 7797.58

### 16.13 base\_omegak\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022152	$0.02218 \pm 0.00029$	$\beta_1^1$	0.43	$0.35 \pm 0.55$	$\sigma_8$	0.8316	$0.825 \pm 0.014$
$\Omega_c h^2$	0.11936	$0.1185 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.29	$10.53 \pm 0.59$	$z_{\text{re}}$	11.60	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04144	$1.04151 \pm 0.00064$	$A_{218}^{\text{PS, ACT}}$	76.07	$77.0 \pm 4.5$	$H_0$	68.02	$67.7 \pm 1.0$
$\tau$	0.0958	$0.093^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.12	$7.66^{+1.3}_{-1.7}$	$10^9 A_s$	2.218	$2.200^{+0.053}_{-0.060}$
$\Omega_K$	0.00089	$-0.0005 \pm 0.0033$	$A_{150}^{\text{PS, SPT}}$	9.80	$10.09 \pm 0.51$	$\Omega_m h^2$	0.14215	$0.1414 \pm 0.0025$
$n_s$	0.9602	$0.9615 \pm 0.0071$	$A_{220}^{\text{PS, SPT}}$	72.91	$74.4 \pm 4.5$	$\Omega_m h^3$	0.09669	$0.0957 \pm 0.0023$
$\ln(10^{10} A_s)$	3.0994	$3.091 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.811	$0.831 \pm 0.089$	$Y_p$	0.247746	$0.24776 \pm 0.00012$
$A_{100}^{\text{PS}}$	200	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.565	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8315	$1.827 \pm 0.012$
$A_{143}^{\text{PS}}$	71.9	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9118	$0.937 \pm 0.023$	Age/Gyr	13.758	$13.82 \pm 0.13$
$A_{217}^{\text{PS}}$	60.2	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.419	$0.43 \pm 0.19$	$z_*$	1090.24	$1090.14 \pm 0.53$
$A_{143}^{\text{CIB}}$	3.31	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.85 \pm 0.20$	$r_*$	144.75	$144.95 \pm 0.58$
$A_{217}^{\text{CIB}}$	52.4	$49.6 \pm 5.1$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9925 \pm 0.0072$	$100\theta_*$	1.04158	$1.04166 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	4.78	$2.55^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0024	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.47	$1059.45 \pm 0.58$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.820 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9880	$0.9888 \pm 0.0072$	$r_{\text{drag}}$	147.50	$147.69 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9612	$0.964 \pm 0.010$	$k_D$	0.14017	$0.13998 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.658	$0.637 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9857	$0.985 \pm 0.020$	$100\theta_D$	0.161272	$0.16128 \pm 0.00033$
$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9850	$0.9882 \pm 0.0096$	$z_{\text{eq}}$	3381	$3362 \pm 59$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0170	$1.025^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8168	$0.821 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.012	$< 0.407$	$\Omega_\Lambda$	0.6918	$0.692^{+0.011}_{-0.010}$	$r_{\text{drag}}/D_V(0.57)$	0.07198	$0.07174 \pm 0.00079$
$A^{\text{kSZ}}$	1.67	$5.32^{+2.8}_{-2.0}$	$\Omega_m$	0.3073	$0.309^{+0.010}_{-0.011}$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.75$ ; R-1 =0.00750

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.86 DR9: 0.46 6DF: 0.03 CMB - lowLike: 2014.59 lowl: -6.15 CamSpec: 7808.14 highL: 692.72

# 16.14 base\_omegak\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022168	$0.02218 \pm 0.00028$	$\beta_1^1$	0.43	$0.36 \pm 0.55$	$\sigma_8$	0.8328	$0.826 \pm 0.013$
$\Omega_c h^2$	0.11947	$0.1187 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.26	$10.51 \pm 0.59$	$z_{\text{re}}$	11.60	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04137	$1.04151 \pm 0.00065$	$A_{218}^{\text{PS, ACT}}$	74.83	$76.9 \pm 4.5$	$H_0$	68.75	$68.64 \pm 0.97$
$\tau$	0.0957	$0.093 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.38	$7.64^{+1.3}_{-1.6}$	$10^9 A_s$	2.219	$2.202 \pm 0.055$
$\Omega_K$	0.00244	$0.0015 \pm 0.0032$	$A_{150}^{\text{PS, SPT}}$	9.72	$10.08 \pm 0.51$	$\Omega_m h^2$	0.14229	$0.1415 \pm 0.0025$
$n_s$	0.9602	$0.9612 \pm 0.0072$	$A_{220}^{\text{PS, SPT}}$	71.91	$74.5 \pm 4.4$	$\Omega_m h^3$	0.09782	$0.0971^{+0.0022}_{-0.0025}$
$\ln(10^{10} A_s)$	3.0995	$3.091 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.810	$0.831 \pm 0.089$	$Y_p$	0.247753	$0.24776 \pm 0.00012$
$A_{100}^{\text{PS}}$	201	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.568	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8321	$1.828 \pm 0.012$
$A_{143}^{\text{PS}}$	71.8	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9086	$0.937 \pm 0.023$	Age/Gyr	13.683	$13.72 \pm 0.13$
$A_{217}^{\text{PS}}$	57.9	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.43 \pm 0.19$	$z_*$	1090.23	$1090.15 \pm 0.53$
$A_{143}^{\text{CIB}}$	3.48	$3.26 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.20$	$r_*$	144.71	$144.91 \pm 0.59$
$A_{217}^{\text{CIB}}$	54.5	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9915	$0.9925 \pm 0.0072$	$100\theta_*$	1.04152	$1.04166 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	5.05	$2.57^{+1.2}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0031	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.51	$1059.48 \pm 0.57$
$r_{143 \times 217}^{\text{PS}}$	0.837	$0.821^{+0.070}_{-0.081}$	$y_{148}^{\text{ACTe}}$	0.9876	$0.9887 \pm 0.0073$	$r_{\text{drag}}$	147.45	$147.64 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9623	$0.964 \pm 0.010$	$k_D$	0.14023	$0.14003 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.683	$0.637 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9846	$0.985 \pm 0.020$	$100\theta_D$	0.161237	$0.16127 \pm 0.00033$
$c_{100}$	1.000589	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9883 \pm 0.0095$	$z_{\text{eq}}$	3385	$3366 \pm 60$
$c_{217}$	0.99741	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0187	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8163	$0.820 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.405$	$\Omega_\Lambda$	0.6965	$0.698^{+0.010}_{-0.0093}$	$r_{\text{drag}}/D_V(0.57)$	0.07253	$0.07246 \pm 0.00074$
$A^{\text{kSZ}}$	1.06	$5.34^{+2.7}_{-2.0}$	$\Omega_m$	0.3011	$0.3006^{+0.0093}_{-0.010}$			

Best-fit  $\chi_{\text{eff}}^2 = 10516.40$ ; R-1 =0.02117

$\chi_{\text{eff}}^2$ : BAO - DR9: 1.30 DR7: 0.19 6DF: 0.11 CMB - lowLike: 2014.50 lowl: -5.99 CamSpec: 7809.12 highL: 692.66 Hubble - HST: 4.42



### 16.15 base\_omegak\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022131	$0.02216 \pm 0.00030$	$r_{143 \times 217}^{\text{PS}}$	0.947	$> 0.850$	$\Omega_m h^3$	0.0959	$0.0974^{+0.0059}_{-0.0068}$
$\Omega_c h^2$	0.11926	$0.1183 \pm 0.0027$	$r_{143 \times 217}^{\text{CIB}}$	0.567	$0.43 \pm 0.23$	$Y_{\text{P}}$	0.247737	$0.24775 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04126	$1.04151 \pm 0.00065$	$\gamma^{\text{CIB}}$	0.564	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8366	$1.829 \pm 0.013$
$\tau$	0.0942	$0.092^{+0.012}_{-0.014}$	$c_{100}$	1.000580	$1.00059 \pm 0.00040$	Age/Gyr	13.810	$13.71 \pm 0.41$
$\Omega_K$	0.0000	$0.0011^{+0.0099}_{-0.0077}$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	$z_*$	1090.26	$1090.14 \pm 0.56$
$n_s$	0.9652	$0.9642 \pm 0.0075$	$\xi^{\text{tSZ-CIB}}$	0.35	—	$r_*$	144.80	$145.03 \pm 0.59$
$\ln(10^{10} A_s)$	3.0990	$3.090^{+0.024}_{-0.027}$	$A^{\text{kSZ}}$	0.0	—	$100\theta_*$	1.04140	$1.04167 \pm 0.00063$
$\alpha_{\text{SNLS}}$	1.414	$1.43 \pm 0.11$	$\beta_1^1$	0.69	$0.50 \pm 0.57$	$z_{\text{drag}}$	1059.40	$1059.40 \pm 0.61$
$\beta_{\text{SNLS}}$	3.248	$3.26 \pm 0.11$	$\Omega_\Lambda$	0.6884	$0.699 \pm 0.027$	$r_{\text{drag}}$	147.55	$147.78 \pm 0.58$
$A_{100}^{\text{PS}}$	152	$169 \pm 60$	$\Omega_m$	0.3116	$0.299^{+0.033}_{-0.038}$	$k_{\text{D}}$	0.14010	$0.13988 \pm 0.00062$
$A_{143}^{\text{PS}}$	65.6	$53 \pm 10$	$\sigma_8$	0.8321	$0.825 \pm 0.015$	$100\theta_{\text{D}}$	0.161276	$0.16132 \pm 0.00035$
$A_{217}^{\text{PS}}$	122.8	$106^{+20}_{-10}$	$z_{\text{re}}$	11.46	$11.2 \pm 1.1$	$z_{\text{eq}}$	3378	$3356 \pm 60$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	67.51	$69.0^{+3.8}_{-4.5}$	$100\theta_{\text{eq}}$	0.8171	$0.822 \pm 0.012$
$A_{217}^{\text{CIB}}$	24.4	$29^{+6}_{-9}$	$10^9 A_s$	2.218	$2.199^{+0.052}_{-0.061}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07161	$0.0728^{+0.0029}_{-0.0035}$
$A_{143}^{\text{tSZ}}$	5.92	—	$\Omega_m h^2$	0.14203	$0.1411 \pm 0.0025$			

Best-fit  $\chi_{\text{eff}}^2 = 10229.86$ ; R-1 = 0.00986

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.50 lowl: -7.32 CamSpec: 7797.94 SN - SNLS: 424.29

## 16.16 base\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022242	$0.02217 \pm 0.00029$	$r_{143 \times 217}^{\text{PS}}$	0.967	$> 0.850$	$\Omega_m h^3$	0.09627	$0.0961 \pm 0.0023$
$\Omega_c h^2$	0.11841	$0.1182 \pm 0.0026$	$r_{143 \times 217}^{\text{CIB}}$	0.664	$0.43 \pm 0.22$	$Y_{\text{P}}$	0.247785	$0.24775 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04149	$1.04153 \pm 0.00064$	$\gamma^{\text{CIB}}$	0.561	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8333	$1.828 \pm 0.013$
$\tau$	0.0956	$0.092^{+0.012}_{-0.014}$	$c_{100}$	1.000586	$1.00057 \pm 0.00040$	Age/Gyr	13.774	$13.78 \pm 0.13$
$\Omega_K$	0.00025	$0.0002 \pm 0.0033$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	$z_*$	1090.04	$1090.12 \pm 0.54$
$n_s$	0.9677	$0.9644 \pm 0.0074$	$\xi^{\text{tSZ-CIB}}$	0.37	—	$r_*$	144.93	$145.05 \pm 0.58$
$\ln(10^{10} A_s)$	3.1000	$3.090^{+0.024}_{-0.027}$	$A^{\text{kSZ}}$	0.5	—	$100\theta_*$	1.04163	$1.04168 \pm 0.00063$
$\alpha_{\text{SNLS}}$	1.419	$1.43 \pm 0.11$	$\beta_1^1$	0.71	$0.50 \pm 0.57$	$z_{\text{drag}}$	1059.59	$1059.42 \pm 0.60$
$\beta_{\text{SNLS}}$	3.248	$3.25 \pm 0.11$	$\Omega_\Lambda$	0.6954	$0.696^{+0.011}_{-0.0094}$	$r_{\text{drag}}$	147.65	$147.80 \pm 0.57$
$A_{100}^{\text{PS}}$	139	$168 \pm 60$	$\Omega_m$	0.3044	$0.304 \pm 0.010$	$k_{\text{D}}$	0.14008	$0.13987 \pm 0.00061$
$A_{143}^{\text{PS}}$	60.7	$53 \pm 10$	$\sigma_8$	0.8302	$0.824 \pm 0.014$	$100\theta_{\text{D}}$	0.161184	$0.16130 \pm 0.00034$
$A_{217}^{\text{PS}}$	123.3	$106^{+20}_{-20}$	$z_{\text{re}}$	11.52	$11.2 \pm 1.1$	$z_{\text{eq}}$	3361	$3353 \pm 58$
$A_{143}^{\text{CIB}}$	0.0	$< 10.7$	$H_0$	68.13	$68.1 \pm 1.0$	$100\theta_{\text{eq}}$	0.8208	$0.822 \pm 0.011$
$A_{217}^{\text{CIB}}$	23.5	$29^{+6}_{-9}$	$10^9 A_s$	2.220	$2.198^{+0.051}_{-0.061}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07206	$0.07211 \pm 0.00077$
$A_{143}^{\text{tSZ}}$	6.74	—	$\Omega_m h^2$	0.14130	$0.1410 \pm 0.0024$			

Best-fit  $\chi_{\text{eff}}^2 = 10231.03$ ; R-1 = 0.01899

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.69 6DF: 0.04 DR9: 0.56 CMB - lowLike: 2014.49 lowl: -7.62 CamSpec: 7798.75 SN - SNLS: 423.65

### 16.17 base\_omegak\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022231	$0.02210 \pm 0.00029$	$r_{143 \times 217}^{\text{PS}}$	0.885	$> 0.847$	$\Omega_m h^3$	0.10236	$0.1027 \pm 0.0036$
$\Omega_c h^2$	0.11793	$0.1186^{+0.0026}_{-0.0029}$	$r_{143 \times 217}^{\text{CIB}}$	0.633	$0.44 \pm 0.23$	$Y_{\text{P}}$	0.247780	$0.24773 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04160	$1.04145 \pm 0.00064$	$\gamma^{\text{CIB}}$	0.547	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8301	$1.830 \pm 0.013$
$\tau$	0.0969	$0.092 \pm 0.013$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	Age/Gyr	13.359	$13.35 \pm 0.22$
$\Omega_K$	0.00804	$0.0085^{+0.0048}_{-0.0040}$	$c_{217}$	0.99653	$0.9964 \pm 0.0013$	$z_*$	1090.02	$1090.24 \pm 0.55$
$n_s$	0.9679	$0.9633 \pm 0.0074$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	145.06	$144.98 \pm 0.59$
$\ln(10^{10} A_s)$	3.1007	$3.091^{+0.024}_{-0.027}$	$A^{\text{kSZ}}$	1.29	—	$100\theta_*$	1.04174	$1.04161 \pm 0.00063$
$\alpha_{\text{SNLS}}$	1.422	$1.43 \pm 0.11$	$\beta_1^1$	0.68	$0.51 \pm 0.57$	$z_{\text{drag}}$	1059.55	$1059.30 \pm 0.60$
$\beta_{\text{SNLS}}$	3.248	$3.26 \pm 0.11$	$\Omega_\Lambda$	0.7255	$0.723^{+0.015}_{-0.014}$	$r_{\text{drag}}$	147.79	$147.75 \pm 0.58$
$A_{100}^{\text{PS}}$	146	$171 \pm 60$	$\Omega_m$	0.2665	$0.269^{+0.016}_{-0.018}$	$k_{\text{D}}$	0.13993	$0.13987 \pm 0.00062$
$A_{143}^{\text{PS}}$	62.1	$53 \pm 10$	$\sigma_8$	0.8329	$0.831^{+0.014}_{-0.015}$	$100\theta_{\text{D}}$	0.161231	$0.16137 \pm 0.00034$
$A_{217}^{\text{PS}}$	119.2	$106^{+20}_{-20}$	$z_{\text{re}}$	11.66	$11.3 \pm 1.1$	$z_{\text{eq}}$	3349	$3363 \pm 59$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$H_0$	72.69	$72.6 \pm 2.2$	$100\theta_{\text{eq}}$	0.8230	$0.820 \pm 0.011$
$A_{217}^{\text{CIB}}$	25.0	$29^{+6}_{-9}$	$10^9 A_s$	2.221	$2.202^{+0.051}_{-0.061}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07559	$0.0756 \pm 0.0017$
$A_{143}^{\text{tSZ}}$	6.63	—	$\Omega_m h^2$	0.14081	$0.1414 \pm 0.0025$			

Best-fit  $\chi_{\text{eff}}^2 = 10230.91$ ; R-1 = 0.01690

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.10 lowl: -6.72 CamSpec: 7801.52 Hubble - HST: 0.24 SN - SNLS: 421.18

### 16.18 base\_omegak\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022138	$0.02220 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.431	$0.41 \pm 0.22$	$\Omega_m h^3$	0.0944	$0.0909^{+0.0058}_{-0.0066}$
$\Omega_c h^2$	0.11952	$0.1184 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.547	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247740	$0.24777 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04130	$1.04151 \pm 0.00064$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8372	$1.830 \pm 0.013$
$\tau$	0.0937	$0.091^{+0.013}_{-0.014}$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.918	$14.17 \pm 0.44$
$\Omega_K$	-0.0024	$-0.0093^{+0.012}_{-0.0096}$	$\xi^{\text{tSZ-CIB}}$	0.25	—	$z_*$	1090.28	$1090.09 \pm 0.56$
$n_s$	0.9642	$0.9640 \pm 0.0073$	$A^{\text{kSZ}}$	1.47	$< 5.97$	$r_*$	144.72	$144.98 \pm 0.59$
$\ln(10^{10} A_s)$	3.0983	$3.088 \pm 0.025$	$\beta_1^1$	0.69	$0.50 \pm 0.56$	$100\theta_*$	1.04146	$1.04165 \pm 0.00063$
$A_{100}^{\text{PS}}$	145	$166 \pm 60$	$\Omega_\Lambda$	0.6791	$0.664^{+0.035}_{-0.030}$	$z_{\text{drag}}$	1059.44	$1059.51 \pm 0.61$
$A_{143}^{\text{PS}}$	61.5	$52 \pm 10$	$\Omega_m$	0.3232	$0.345^{+0.039}_{-0.046}$	$r_{\text{drag}}$	147.47	$147.71 \pm 0.58$
$A_{217}^{\text{PS}}$	121.3	$106^{+20}_{-10}$	$\sigma_8$	0.8311	$0.819 \pm 0.016$	$k_D$	0.14019	$0.13998 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.1$	$z_{\text{re}}$	11.41	$11.0 \pm 1.1$	$100\theta_D$	0.161268	$0.16125 \pm 0.00035$
$A_{217}^{\text{CIB}}$	23.9	$29^{+6}_{-9}$	$H_0$	66.35	$64.3^{+3.7}_{-4.4}$	$z_{\text{eq}}$	3385	$3359 \pm 60$
$A^{\text{tSZ}}_{143}$	6.37	—	$10^9 A_s$	2.216	$2.194^{+0.053}_{-0.060}$	$100\theta_{\text{eq}}$	0.8161	$0.821 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.931	$> 0.851$	$\Omega_m h^2$	0.14230	$0.1412 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07072	$0.0692^{+0.0028}_{-0.0033}$

Best-fit  $\chi^2_{\text{eff}} = 9935.86$ ; R-1 = 0.01654

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.63 lowl: -7.37 CamSpec: 7797.20 SN - Union2.1: 130.82

### 16.19 base\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_lensing

Best-fit  $\chi^2_{\text{eff}} = 9946.52$

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.62 lensing: 9.97 lowl: -7.24 CamSpec: 7798.29 SN - Union2.1: 130.30

## 16.20 base\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022160	$0.02215 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.524	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09636	$0.0960 \pm 0.0023$
$\Omega_c h^2$	0.11910	$0.1186 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.544	$0.53^{+0.14}_{-0.11}$	$Y_P$	0.247750	$0.24774 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04143	$1.04144 \pm 0.00062$	$c_{100}$	1.000569	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8357	$1.830 \pm 0.013$
$\tau$	0.0937	$0.092^{+0.012}_{-0.014}$	$c_{217}$	0.99637	$0.9964 \pm 0.0013$	Age/Gyr	13.776	$13.80 \pm 0.13$
$\Omega_K$	0.00048	$0.0000 \pm 0.0033$	$\xi^{\text{tSZ-CIB}}$	0.18	—	$z_*$	1090.21	$1090.18 \pm 0.55$
$n_s$	0.9653	$0.9634^{+0.0068}_{-0.0077}$	$A^{\text{kSZ}}$	0.88	$< 6.15$	$r_*$	144.82	$144.96 \pm 0.59$
$\ln(10^{10} A_s)$	3.0974	$3.091^{+0.024}_{-0.027}$	$\beta_1^1$	0.69	$0.53 \pm 0.54$	$100\theta_*$	1.04158	$1.04160 \pm 0.00061$
$A_{100}^{\text{PS}}$	145	$169 \pm 60$	$\Omega_\Lambda$	0.6918	$0.693 \pm 0.010$	$z_{\text{drag}}$	1059.47	$1059.39 \pm 0.59$
$A_{143}^{\text{PS}}$	63.4	$53 \pm 10$	$\Omega_m$	0.3077	$0.307 \pm 0.010$	$r_{\text{drag}}$	147.56	$147.71 \pm 0.58$
$A_{217}^{\text{PS}}$	121.7	$106^{+20}_{-10}$	$\sigma_8$	0.8312	$0.826 \pm 0.014$	$k_D$	0.14011	$0.13994 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$z_{\text{re}}$	11.40	$11.2 \pm 1.1$	$100\theta_D$	0.161267	$0.16131 \pm 0.00034$
$A_{217}^{\text{CIB}}$	24.2	$29^{+6}_{-9}$	$H_0$	67.91	$67.9 \pm 1.0$	$z_{\text{eq}}$	3375	$3363 \pm 59$
$A_{143}^{\text{tSZ}}$	6.33	—	$10^9 A_s$	2.214	$2.200^{+0.052}_{-0.061}$	$100\theta_{\text{eq}}$	0.8179	$0.820 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.913	$> 0.847$	$\Omega_m h^2$	0.14190	$0.1414 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07190	$0.07190 \pm 0.00078$

Best-fit  $\chi^2_{\text{eff}} = 9937.58$ ; R-1 = 0.02581

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.98 6DF: 0.02 DR9: 0.37 CMB - lowLike: 2014.40 lowl: -7.27 CamSpec: 7798.13 SN - Union2.1: 130.35

## 16.21 base\_omegak\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022257	$0.02207 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.465	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09735	$0.1016 \pm 0.0037$
$\Omega_c h^2$	0.11788	$0.1191 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.519	$0.54 \pm 0.12$	$Y_P$	0.247791	$0.24771 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04159	$1.04138 \pm 0.00064$	$c_{100}$	1.000592	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8280	$1.832 \pm 0.013$
$\tau$	0.0975	$0.092^{+0.012}_{-0.015}$	$c_{217}$	0.99630	$0.9964^{+0.0013}_{-0.0015}$	Age/Gyr	13.691	$13.43 \pm 0.22$
$\Omega_K$	0.00177	$0.0073^{+0.0052}_{-0.0043}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.98	$1090.32 \pm 0.55$
$n_s$	0.9668	$0.9624^{+0.0071}_{-0.0081}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.06	$144.89 \pm 0.60$
$\ln(10^{10} A_s)$	3.1008	$3.092^{+0.024}_{-0.027}$	$\beta_1^1$	0.59	$0.55 \pm 0.58$	$100\theta_*$	1.04173	$1.04154 \pm 0.00063$
$A_{100}^{\text{PS}}$	133	$171 \pm 60$	$\Omega_\Lambda$	0.7038	$0.716 \pm 0.015$	$z_{\text{drag}}$	1059.59	$1059.25 \pm 0.60$
$A_{143}^{\text{PS}}$	51.8	$54 \pm 10$	$\Omega_m$	0.2944	$0.277^{+0.017}_{-0.019}$	$r_{\text{drag}}$	147.77	$147.67 \pm 0.59$
$A_{217}^{\text{PS}}$	116.3	$106^{+20}_{-20}$	$\sigma_8$	0.8293	$0.832 \pm 0.014$	$k_D$	0.13996	$0.13993 \pm 0.00063$
$A_{143}^{\text{CIB}}$	3.39	$< 10.1$	$z_{\text{re}}$	11.67	$11.3^{+1.0}_{-1.2}$	$100\theta_D$	0.161198	$0.16139 \pm 0.00035$
$A_{217}^{\text{CIB}}$	27.3	$29^{+6}_{-9}$	$H_0$	69.15	$71.6 \pm 2.2$	$z_{\text{eq}}$	3349	$3373 \pm 60$
$A_{143}^{\text{tSZ}}$	9.24	$> 3.74$	$10^9 A_s$	2.222	$2.203^{+0.050}_{-0.062}$	$100\theta_{\text{eq}}$	0.8232	$0.818 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.890	$> 0.852$	$\Omega_m h^2$	0.14078	$0.1418 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07285	$0.0748 \pm 0.0017$

Best-fit  $\chi^2_{\text{eff}} = 9940.75$ ; R-1 = 0.04114

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.55 lowl: -7.29 CamSpec: 7798.85 Hubble - HST: 3.77 SN - Union2.1: 130.06

## 16.22 base\_omegak\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022054	$0.02208 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.398	$0.44 \pm 0.22$	$\Omega_m h^3$	0.10212	$0.1015 \pm 0.0038$
$\Omega_c h^2$	0.11935	$0.1191 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.533	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247704	$0.24772 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04135	$1.04141 \pm 0.00064$	$c_{100}$	1.000589	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8319	$1.832 \pm 0.013$
$\tau$	0.0797	$0.092^{+0.013}_{-0.014}$	$c_{217}$	0.99629	$0.9964 \pm 0.0014$	Age/Gyr	13.394	$13.43 \pm 0.23$
$\Omega_K$	0.00815	$0.0071^{+0.0051}_{-0.0043}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.37	$1090.31 \pm 0.56$
$n_s$	0.9607	$0.9622 \pm 0.0074$	$A^{\text{kSZ}}$	4.78	—	$r_*$	144.83	$144.89 \pm 0.60$
$\ln(10^{10} A_s)$	3.0673	$3.091 \pm 0.025$	$\beta_1^1$	0.57	$0.51 \pm 0.56$	$100\theta_*$	1.04151	$1.04157 \pm 0.00063$
$A_{100}^{\text{PS}}$	146	$171 \pm 60$	$\Omega_\Lambda$	0.7170	$0.715^{+0.018}_{-0.015}$	$z_{\text{drag}}$	1059.25	$1059.27 \pm 0.60$
$A_{143}^{\text{PS}}$	44.9	$53 \pm 10$	$\Omega_m$	0.2748	$0.278^{+0.017}_{-0.021}$	$r_{\text{drag}}$	147.61	$147.66 \pm 0.59$
$A_{217}^{\text{PS}}$	109.2	$106^{+20}_{-20}$	$\sigma_8$	0.8226	$0.831 \pm 0.014$	$k_D$	0.13997	$0.13994 \pm 0.00062$
$A_{143}^{\text{CIB}}$	5.66	$< 11.0$	$z_{\text{re}}$	10.24	$11.3 \pm 1.1$	$100\theta_D$	0.161400	$0.16139 \pm 0.00035$
$A_{217}^{\text{CIB}}$	28.2	$29^{+6}_{-9}$	$H_0$	71.89	$71.6 \pm 2.3$	$z_{\text{eq}}$	3379	$3373 \pm 61$
$A^{\text{tSZ}}_{143}$	7.69	—	$10^9 A_s$	2.148	$2.201^{+0.053}_{-0.062}$	$100\theta_{\text{eq}}$	0.8170	$0.818 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.850$	$\Omega_m h^2$	0.14205	$0.1418 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07500	$0.0748 \pm 0.0018$

Best-fit  $\chi^2_{\text{eff}} = 9810.37$ ; R-1 = 0.01118

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.16 lowl: -6.32 CamSpec: 7801.18 Hubble - HST: 0.66

### 16.23 base\_omegak\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022215	$0.02213 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.494	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09729	$0.0974^{+0.0022}_{-0.0025}$
$\Omega_c h^2$	0.11873	$0.1190 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.535	$0.53 \pm 0.12$	$Y_P$	0.247773	$0.24774 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04154	$1.04145 \pm 0.00065$	$c_{100}$	1.000590	$1.00058 \pm 0.00041$	$10^9 A_s e^{-2\tau}$	1.8347	$1.832 \pm 0.013$
$\tau$	0.0944	$0.092^{+0.013}_{-0.015}$	$c_{217}$	0.99647	$0.9964 \pm 0.0014$	Age/Gyr	13.708	$13.71 \pm 0.13$
$\Omega_K$	0.00165	$0.0020 \pm 0.0032$	$\xi^{\text{tSZ-CIB}}$	0.12	—	$z_*$	1090.11	$1090.24 \pm 0.56$
$n_s$	0.9668	$0.9624 \pm 0.0075$	$A^{\text{kSZ}}$	0.7	—	$r_*$	144.87	$144.88 \pm 0.60$
$\ln(10^{10} A_s)$	3.0983	$3.091^{+0.025}_{-0.028}$	$\beta_1^1$	0.73	$0.50 \pm 0.55$	$100\theta_*$	1.04168	$1.04160 \pm 0.00064$
$A_{100}^{\text{PS}}$	146	$170 \pm 60$	$\Omega_\Lambda$	0.6985	$0.6977 \pm 0.0099$	$z_{\text{drag}}$	1059.55	$1059.38 \pm 0.60$
$A_{143}^{\text{PS}}$	62.4	$53 \pm 10$	$\Omega_m$	0.2999	$0.3004 \pm 0.0098$	$r_{\text{drag}}$	147.59	$147.63 \pm 0.58$
$A_{217}^{\text{PS}}$	121.7	$106^{+20}_{-20}$	$\sigma_8$	0.8313	$0.828 \pm 0.014$	$k_D$	0.14012	$0.14001 \pm 0.00061$
$A_{143}^{\text{CIB}}$	0.0	$< 11.2$	$z_{\text{re}}$	11.44	$11.2 \pm 1.1$	$100\theta_D$	0.161219	$0.16132 \pm 0.00034$
$A_{217}^{\text{CIB}}$	24.0	$29^{+6}_{-9}$	$H_0$	68.71	$68.71 \pm 0.98$	$z_{\text{eq}}$	3368	$3371 \pm 61$
$A_{143}^{\text{tSZ}}$	6.46	—	$10^9 A_s$	2.216	$2.200^{+0.053}_{-0.063}$	$100\theta_{\text{eq}}$	0.8195	$0.819 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.900	$> 0.848$	$\Omega_m h^2$	0.14159	$0.1417 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07250	$0.07254 \pm 0.00075$

Best-fit  $\chi^2_{\text{eff}} = 9812.39$ ; R-1 = 0.02221

$\chi^2_{\text{eff}}$ : BAO - DR9: 1.26 DR7: 0.19 6DF: 0.10 CMB - lowLike: 2014.34 lowl: -7.39 CamSpec: 7798.71 Hubble - HST: 4.48



## 16.24 base\_omegak\_planck\_lowl\_lowLike\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022179	$0.02228 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.201	$0.43 \pm 0.22$	$\Omega_m h^3$	0.0959	$0.0920^{+0.0053}_{-0.0059}$
$\Omega_c h^2$	0.11832	$0.1173 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.541	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247758	$0.24780 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04149	$1.04160 \pm 0.00064$	$c_{100}$	1.000580	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8317	$1.825 \pm 0.012$
$\tau$	0.0956	$0.087 \pm 0.013$	$c_{217}$	0.99627	$0.9963 \pm 0.0014$	Age/Gyr	13.794	$14.07 \pm 0.38$
$\Omega_K$	0.0000	$-0.0069^{+0.010}_{-0.0083}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.12	$1089.89 \pm 0.56$
$n_s$	0.9666	$0.9663 \pm 0.0075$	$A^{\text{kSZ}}$	0.1	—	$r_*$	145.00	$145.21 \pm 0.59$
$\ln(10^{10} A_s)$	3.0991	$3.079 \pm 0.025$	$\beta_1^1$	0.60	$0.43 \pm 0.57$	$100\theta_*$	1.04164	$1.04174 \pm 0.00063$
$A_{100}^{\text{PS}}$	150	$166 \pm 60$	$\Omega_\Lambda$	0.6945	$0.679^{+0.026}_{-0.023}$	$z_{\text{drag}}$	1059.44	$1059.61 \pm 0.60$
$A_{143}^{\text{PS}}$	57.3	$50 \pm 10$	$\Omega_m$	0.3055	$0.328^{+0.030}_{-0.035}$	$r_{\text{drag}}$	147.74	$147.91 \pm 0.57$
$A_{217}^{\text{PS}}$	119.4	$103^{+20}_{-20}$	$\sigma_8$	0.8296	$0.813 \pm 0.016$	$k_D$	0.13993	$0.13983 \pm 0.00060$
$A_{143}^{\text{CIB}}$	2.91	$< 11.0$	$z_{\text{re}}$	11.54	$10.7 \pm 1.1$	$100\theta_D$	0.161276	$0.16119 \pm 0.00034$
$A_{217}^{\text{CIB}}$	25.6	$29^{+6}_{-9}$	$H_0$	67.97	$65.6 \pm 3.4$	$z_{\text{eq}}$	3357	$3334 \pm 60$
$A^{\text{tSZ}}_{143}$	6.60	—	$10^9 A_s$	2.218	$2.174 \pm 0.054$	$100\theta_{\text{eq}}$	0.8213	$0.826 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.893	$> 0.843$	$\Omega_m h^2$	0.14114	$0.1402 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07197	$0.0702^{+0.0025}_{-0.0028}$

Best-fit  $\chi^2_{\text{eff}} = 9815.51$ ; R-1 = 0.01058

$\chi^2_{\text{eff}}$ : CMB - lensing: 10.07 lowLike: 2014.52 lowl: -7.48 CamSpec: 7797.77

## 16.25 base\_omegak\_planck\_lowl\_lowLike\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022275	$0.02224 \pm 0.00029$	$r_{143 \times 217}^{\text{CIB}}$	0.372	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09599	$0.0955 \pm 0.0023$
$\Omega_c h^2$	0.11762	$0.1178 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.526	$0.53 \pm 0.13$	$Y_P$	0.247799	$0.24778 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04150	$1.04154 \pm 0.00063$	$c_{100}$	1.000596	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8279	$1.827 \pm 0.012$
$\tau$	0.0973	$0.091 \pm 0.012$	$c_{217}$	0.99629	$0.9964 \pm 0.0014$	Age/Gyr	13.781	$13.82 \pm 0.13$
$\Omega_K$	-0.00004	$-0.0007 \pm 0.0033$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.93	$1089.99 \pm 0.54$
$n_s$	0.9681	$0.9653 \pm 0.0074$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.11	$145.10 \pm 0.57$
$\ln(10^{10} A_s)$	3.1003	$3.087 \pm 0.022$	$\beta_1^1$	0.59	$0.47 \pm 0.57$	$100\theta_*$	1.04164	$1.04168 \pm 0.00062$
$A_{100}^{\text{PS}}$	134	$167 \pm 60$	$\Omega_\Lambda$	0.6988	$0.6955 \pm 0.0096$	$z_{\text{drag}}$	1059.63	$1059.55 \pm 0.60$
$A_{143}^{\text{PS}}$	52.3	$51 \pm 10$	$\Omega_m$	0.3013	$0.3052 \pm 0.0099$	$r_{\text{drag}}$	147.82	$147.82 \pm 0.56$
$A_{217}^{\text{PS}}$	116.7	$104^{+20}_{-10}$	$\sigma_8$	0.8277	$0.822 \pm 0.011$	$k_D$	0.13992	$0.13990 \pm 0.00060$
$A_{143}^{\text{CIB}}$	2.94	$< 11.0$	$z_{\text{re}}$	11.63	$11.1 \pm 1.0$	$100\theta_D$	0.161165	$0.16122 \pm 0.00034$
$A_{217}^{\text{CIB}}$	26.4	$29^{+6}_{-9}$	$H_0$	68.30	$67.9 \pm 1.0$	$z_{\text{eq}}$	3343	$3346 \pm 57$
$A_{143}^{\text{tSZ}}$	8.45	—	$10^9 A_s$	2.2205	$2.192 \pm 0.049$	$100\theta_{\text{eq}}$	0.8243	$0.824 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.893	$> 0.848$	$\Omega_m h^2$	0.14054	$0.1407 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07220	$0.07191 \pm 0.00078$

Best-fit  $\chi^2_{\text{eff}} = 9816.93$ ; R-1 = 0.02067

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.75 DR7: 0.47 6DF: 0.05 CMB - lensing: 9.59 lowLike: 2014.59 lowl: -7.68 CamSpec: 7798.41

## 16.26 base\_omegak\_planck\_lowl\_lowLike\_lensing\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022299	$0.02219 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.383	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09962	$0.1008 \pm 0.0036$
$\Omega_c h^2$	0.11808	$0.1187 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.524	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247809	$0.24776 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04161	$1.04147 \pm 0.00064$	$c_{100}$	1.000596	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8307	$1.831 \pm 0.012$
$\tau$	0.0946	$0.095 \pm 0.013$	$c_{217}$	0.99633	$0.9965 \pm 0.0014$	Age/Gyr	13.543	$13.48 \pm 0.21$
$\Omega_K$	0.00458	$0.0061^{+0.0051}_{-0.0042}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.94	$1090.14 \pm 0.55$
$n_s$	0.9674	$0.9638 \pm 0.0075$	$A^{\text{kSZ}}$	0.00	$< 6.26$	$r_*$	144.97	$144.91 \pm 0.56$
$\ln(10^{10} A_s)$	3.0965	$3.097 \pm 0.024$	$\beta_1^1$	0.65	$0.52 \pm 0.57$	$100\theta_*$	1.04174	$1.04161 \pm 0.00063$
$A_{100}^{\text{PS}}$	133	$168 \pm 60$	$\Omega_\Lambda$	0.7128	$0.714^{+0.014}_{-0.013}$	$z_{\text{drag}}$	1059.70	$1059.49 \pm 0.61$
$A_{143}^{\text{PS}}$	53.7	$52 \pm 10$	$\Omega_m$	0.2826	$0.280^{+0.015}_{-0.017}$	$r_{\text{drag}}$	147.67	$147.64 \pm 0.55$
$A_{217}^{\text{PS}}$	117.8	$105^{+20}_{-10}$	$\sigma_8$	0.8299	$0.833 \pm 0.013$	$k_D$	0.14010	$0.14004 \pm 0.00059$
$A_{143}^{\text{CIB}}$	2.15	$< 10.6$	$z_{\text{re}}$	11.43	$11.5 \pm 1.1$	$100\theta_D$	0.161132	$0.16126 \pm 0.00035$
$A_{217}^{\text{CIB}}$	26.0	$29^{+6}_{-9}$	$H_0$	70.64	$71.2 \pm 2.0$	$z_{\text{eq}}$	3354	$3366 \pm 57$
$A_{143}^{\text{tSZ}}$	8.70	—	$10^9 A_s$	2.212	$2.214^{+0.051}_{-0.056}$	$100\theta_{\text{eq}}$	0.8223	$0.820^{+0.011}_{-0.012}$
$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.844$	$\Omega_m h^2$	0.14102	$0.1415 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07396	$0.0745 \pm 0.0016$

Best-fit  $\chi^2_{\text{eff}} = 9818.72$ ; R-1 = 0.03609

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.35 lowLike: 2014.13 lowl: -7.14 CamSpec: 7799.86 Hubble - HST: 1.76

## 16.27 base\_omegak\_planck\_lowl\_lowLike\_lensing\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022246	$0.02226 \pm 0.00030$	$r_{143 \times 217}^{\text{CIB}}$	0.126	$0.43 \pm 0.22$	$\Omega_m h^3$	0.0969	$0.0973 \pm 0.0051$
$\Omega_c h^2$	0.11738	$0.1176 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.541	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247786	$0.24779 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04154	$1.04157 \pm 0.00064$	$c_{100}$	1.000596	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8260	$1.826 \pm 0.012$
$\tau$	0.0977	$0.094 \pm 0.013$	$c_{217}$	0.99626	$0.9964 \pm 0.0014$	Age/Gyr	13.715	$13.70 \pm 0.33$
$\Omega_K$	0.0013	$0.0012^{+0.0078}_{-0.0064}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.95	$1089.96 \pm 0.56$
$n_s$	0.9673	$0.9660 \pm 0.0075$	$A^{\text{kSZ}}$	4.06	—	$r_*$	145.20	$145.13 \pm 0.58$
$\ln(10^{10} A_s)$	3.1002	$3.092 \pm 0.024$	$\beta_1^1$	0.54	$0.48 \pm 0.57$	$100\theta_*$	1.04168	$1.04171 \pm 0.00063$
$A_{100}^{\text{PS}}$	144	$167 \pm 60$	$\Omega_\Lambda$	0.7046	$0.704^{+0.020}_{-0.018}$	$z_{\text{drag}}$	1059.55	$1059.58 \pm 0.61$
$A_{143}^{\text{PS}}$	50.6	$51 \pm 10$	$\Omega_m$	0.2941	$0.295^{+0.023}_{-0.027}$	$r_{\text{drag}}$	147.92	$147.84 \pm 0.57$
$A_{217}^{\text{PS}}$	114.0	$104^{+20}_{-10}$	$\sigma_8$	0.8274	$0.825 \pm 0.015$	$k_D$	0.13980	$0.13988 \pm 0.00060$
$A_{143}^{\text{CIB}}$	2.91	$< 10.8$	$z_{\text{re}}$	11.68	$11.3 \pm 1.1$	$100\theta_D$	0.161221	$0.16121 \pm 0.00035$
$A_{217}^{\text{CIB}}$	24.8	$29^{+6}_{-9}$	$H_0$	69.06	$69.2 \pm 3.0$	$z_{\text{eq}}$	3336	$3343 \pm 59$
$A_{143}^{\text{tSZ}}$	6.07	—	$10^9 A_s$	2.220	$2.203^{+0.051}_{-0.058}$	$100\theta_{\text{eq}}$	0.8254	$0.824 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.890	$> 0.845$	$\Omega_m h^2$	0.14027	$0.1405 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07281	$0.0729 \pm 0.0023$

Best-fit  $\chi^2_{\text{eff}} = 10244.41$ ; R-1 = 0.01627

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.28 lowLike: 2014.56 lowl: -7.41 CamSpec: 7799.26 SN - SNLS: 428.10

## 16.28 base\_omegak\_planck\_lowl\_lowLike\_highL\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022334	$0.02231 \pm 0.00028$	$\beta_1^1$	0.33	$0.29 \pm 0.55$	$\sigma_8$	0.8202	$0.809 \pm 0.016$
$\Omega_c h^2$	0.11677	$0.1170 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.54	$10.70 \pm 0.59$	$z_{\text{re}}$	11.67	$10.6 \pm 1.1$
$100\theta_{\text{MC}}$	1.04167	$1.04164 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.62	$77.0 \pm 4.5$	$H_0$	65.73	$64.6 \pm 3.3$
$\tau$	0.0986	$0.087^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.77	$7.95^{+1.4}_{-1.7}$	$10^9 A_s$	2.218	$2.167^{+0.050}_{-0.058}$
$\Omega_K$	-0.0064	$-0.0096^{+0.010}_{-0.0082}$	$A_{150}^{\text{PS, SPT}}$	10.10	$10.29 \pm 0.51$	$\Omega_m h^2$	0.13975	$0.1399 \pm 0.0024$
$n_s$	0.9663	$0.9648 \pm 0.0070$	$A_{220}^{\text{PS, SPT}}$	73.68	$74.8 \pm 4.5$	$\Omega_m h^3$	0.0919	$0.0904 \pm 0.0053$
$\ln(10^{10} A_s)$	3.0991	$3.075^{+0.023}_{-0.026}$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.830 \pm 0.087$	$Y_P$	0.247824	$0.24781 \pm 0.00012$
$A_{100}^{\text{PS}}$	202	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.534	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8209	$1.822 \pm 0.012$
$A_{143}^{\text{PS}}$	71.5	$71.8 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9071	$0.933 \pm 0.023$	Age/Gyr	14.063	$14.19 \pm 0.37$
$A_{217}^{\text{PS}}$	58.7	$57 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.423	$0.43 \pm 0.19$	$z_*$	1089.78	$1089.84 \pm 0.52$
$A_{143}^{\text{CIB}}$	3.13	$3.25 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.840	$0.84 \pm 0.20$	$r_*$	145.29	$145.26 \pm 0.57$
$A_{217}^{\text{CIB}}$	52.3	$50.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9923	$0.9930 \pm 0.0073$	$100\theta_*$	1.04181	$1.04177 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	4.41	$2.49^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0046	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.70	$1059.65 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.822^{+0.071}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9887	$0.9894 \pm 0.0072$	$r_{\text{drag}}$	147.99	$147.96 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9630	$0.965 \pm 0.010$	$k_D$	0.13980	$0.13980 \pm 0.00058$
$\gamma^{\text{CIB}}$	0.659	$0.644 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9863	$0.986 \pm 0.020$	$100\theta_D$	0.161139	$0.16117 \pm 0.00032$
$c_{100}$	1.000595	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9875	$0.9903 \pm 0.0096$	$z_{\text{eq}}$	3324	$3329 \pm 57$
$c_{217}$	0.99727	$0.9973 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0195	$1.027^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8281	$0.827 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.384$	$\Omega_\Lambda$	0.6830	$0.672^{+0.027}_{-0.023}$	$r_{\text{drag}}/D_V(0.57)$	0.07024	$0.0694 \pm 0.0025$
$A^{\text{kSZ}}$	1.18	$4.57^{+2.6}_{-2.1}$	$\Omega_m$	0.3234	$0.338^{+0.029}_{-0.036}$			

Best-fit  $\chi_{\text{eff}}^2 = 10517.04$ ; R-1 = 0.00967

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2015.07 lensing: 10.19 lowl: -7.97 CamSpec: 7809.20 highL: 690.45

## 16.29 base\_omegak\_planck\_lowl\_lowLike\_highL\_lensing\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022192	$0.02225 \pm 0.00027$	$\beta_1^1$	0.41	$0.33 \pm 0.55$	$\sigma_8$	0.8296	$0.821 \pm 0.011$
$\Omega_c h^2$	0.11871	$0.1177 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.49	$10.66 \pm 0.58$	$z_{\text{re}}$	11.59	$11.1 \pm 1.0$
$100\theta_{\text{MC}}$	1.04140	$1.04156 \pm 0.00063$	$A_{218}^{\text{PS, ACT}}$	76.51	$77.0^{+4.9}_{-4.4}$	$H_0$	68.22	$67.8 \pm 1.0$
$\tau$	0.0961	$0.091^{+0.012}_{-0.013}$	$A_{95}^{\text{PS, SPT}}$	7.71	$7.94^{+1.4}_{-1.7}$	$10^9 A_s$	2.2169	$2.190^{+0.046}_{-0.053}$
$\Omega_K$	0.00078	$-0.00099 \pm 0.0032$	$A_{150}^{\text{PS, SPT}}$	10.04	$10.24 \pm 0.52$	$\Omega_m h^2$	0.14154	$0.1406 \pm 0.0023$
$n_s$	0.9619	$0.9635 \pm 0.0067$	$A_{220}^{\text{PS, SPT}}$	73.49	$74.7 \pm 4.5$	$\Omega_m h^3$	0.09655	$0.0954 \pm 0.0022$
$\ln(10^{10} A_s)$	3.0987	$3.086 \pm 0.022$	$r_{95 \times 150}^{\text{PS}}$	0.786	$0.830 \pm 0.089$	$Y_P$	0.247764	$0.24779 \pm 0.00012$
$A_{100}^{\text{PS}}$	205	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.531	$0.58^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8292	$1.825 \pm 0.011$
$A_{143}^{\text{PS}}$	72.6	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9080	$0.934 \pm 0.023$	Age/Gyr	13.757	$13.83 \pm 0.13$
$A_{217}^{\text{PS}}$	60.0	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.424	$0.43 \pm 0.19$	$z_*$	1090.134	$1089.98 \pm 0.50$
$A_{143}^{\text{CIB}}$	3.09	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.84 \pm 0.19$	$r_*$	144.89	$145.11 \pm 0.54$
$A_{217}^{\text{CIB}}$	52.1	$50.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9928 \pm 0.0072$	$100\theta_*$	1.04154	$1.04171 \pm 0.00062$
$A_{143}^{\text{tSZ}}$	4.36	$2.49^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0038	$1.007^{+0.013}_{-0.014}$	$z_{\text{drag}}$	1059.51	$1059.57 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.815	$0.822 \pm 0.073$	$y_{148}^{\text{ACTe}}$	0.9881	$0.9894 \pm 0.0070$	$r_{\text{drag}}$	147.62	$147.83 \pm 0.53$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9622	$0.965 \pm 0.011$	$k_D$	0.14007	$0.13990 \pm 0.00057$
$\gamma^{\text{CIB}}$	0.658	$0.644 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9849	$0.986 \pm 0.019$	$100\theta_D$	0.161228	$0.16121 \pm 0.00031$
$c_{100}$	1.000590	$1.00060 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9861	$0.9898 \pm 0.0097$	$z_{\text{eq}}$	3367	$3345 \pm 54$
$c_{217}$	0.99733	$0.9973 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0188	$1.026^{+0.021}_{-0.025}$	$100\theta_{\text{eq}}$	0.8196	$0.824 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.390$	$\Omega_\Lambda$	0.6950	$0.6950 \pm 0.0093$	$r_{\text{drag}}/D_V(0.57)$	0.07214	$0.07184 \pm 0.00076$
$A^{\text{kSZ}}$	1.39	$4.72^{+2.7}_{-2.0}$	$\Omega_m$	0.3042	$0.3059 \pm 0.0097$			

Best-fit  $\chi_{\text{eff}}^2 = 10519.00$ ; R-1 =0.02876

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.59 DR9: 0.66 6DF: 0.04 CMB - lowLike: 2014.56 lensing: 9.74 lowl: -6.52 CamSpec: 7808.60 highL: 691.22

### 16.30 base\_omegak\_planck\_lowl\_lowLike\_highL\_lensing\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022202	$0.02219 \pm 0.00028$	$\beta_1^1$	0.49	$0.41 \pm 0.54$	$\sigma_8$	0.8334	$0.830 \pm 0.013$
$\Omega_c h^2$	0.11905	$0.1186 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.63 \pm 0.58$	$z_{\text{re}}$	11.56	$11.5 \pm 1.1$
$100\theta_{\text{MC}}$	1.04146	$1.04150 \pm 0.00059$	$A_{218}^{\text{PS, ACT}}$	76.05	$76.7^{+5.0}_{-3.8}$	$H_0$	71.03	$70.7^{+2.0}_{-2.3}$
$\tau$	0.0954	$0.095 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.41	$7.74^{+1.3}_{-1.6}$	$10^9 A_s$	2.216	$2.210^{+0.048}_{-0.061}$
$\Omega_K$	0.00619	$0.0052 \pm 0.0047$	$A_{150}^{\text{PS, SPT}}$	9.94	$10.18 \pm 0.50$	$\Omega_m h^2$	0.14190	$0.1415 \pm 0.0024$
$n_s$	0.9614	$0.9616 \pm 0.0070$	$A_{220}^{\text{PS, SPT}}$	72.76	$74.5 \pm 4.4$	$\Omega_m h^3$	0.10079	$0.1001^{+0.0035}_{-0.0039}$
$\ln(10^{10} A_s)$	3.0985	$3.095^{+0.023}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.807	$0.839^{+0.10}_{-0.086}$	$Y_P$	0.247768	$0.24776 \pm 0.00012$
$A_{100}^{\text{PS}}$	207	$214^{+60}_{-50}$	$r_{95 \times 220}^{\text{PS}}$	0.558	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8316	$1.829 \pm 0.012$
$A_{143}^{\text{PS}}$	72.3	$72^{+9}_{-8}$	$r_{150 \times 220}^{\text{PS}}$	0.9083	$0.935^{+0.022}_{-0.027}$	Age/Gyr	13.480	$13.52 \pm 0.22$
$A_{217}^{\text{PS}}$	60.1	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.44 \pm 0.19$	$z_*$	1090.15	$1090.14 \pm 0.52$
$A_{143}^{\text{CIB}}$	3.31	$3.30 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.834	$0.85 \pm 0.20$	$r_*$	144.79	$144.92 \pm 0.55$
$A_{217}^{\text{CIB}}$	52.8	$50.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9920	$0.9926 \pm 0.0073$	$100\theta_*$	1.04160	$1.04165 \pm 0.00058$
$A_{143}^{\text{tSZ}}$	4.83	$2.57^{+1.1}_{-2.0}$	$y_{217}^{\text{ACTs}}$	1.0028	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.55	$1059.48 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.826 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9894 \pm 0.0072$	$r_{\text{drag}}$	147.52	$147.65 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9613	$0.965 \pm 0.011$	$k_D$	0.14018	$0.14003 \pm 0.00057$
$\gamma^{\text{CIB}}$	0.664	$0.644 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9853	$0.985 \pm 0.019$	$100\theta_D$	0.161215	$0.16127 \pm 0.00032$
$c_{100}$	1.000588	$1.00059 \pm 0.00042$	$y_{150}^{\text{SPT}}$	0.9857	$0.9890 \pm 0.0097$	$z_{\text{eq}}$	3375	$3365 \pm 56$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0165	$1.026^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8181	$0.820 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.404$	$\Omega_\Lambda$	0.7125	$0.711 \pm 0.013$	$r_{\text{drag}}/D_V(0.57)$	0.07427	$0.0741^{+0.0015}_{-0.0018}$
$A^{\text{kSZ}}$	0.86	$4.81^{+2.8}_{-2.1}$	$\Omega_m$	0.2813	$0.283 \pm 0.016$			

Best-fit  $\chi_{\text{eff}}^2 = 10521.09$ ; R-1 =0.08177

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.20 lensing: 9.44 lowl: -5.68 CamSpec: 7809.57 highL: 692.12 Hubble - HST: 1.36

### 16.31 base\_omegak\_planck\_lowl\_lowLike\_highL\_lensing\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022256	$0.02227 \pm 0.00028$	$\beta_1^1$	0.42	$0.35 \pm 0.55$	$\sigma_8$	0.8292	$0.821 \pm 0.015$
$\Omega_c h^2$	0.11804	$0.1174 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.49	$10.66 \pm 0.59$	$z_{\text{re}}$	11.65	$11.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.04159	$1.04161 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.53	$76.9^{+4.9}_{-4.2}$	$H_0$	69.67	$68.2 \pm 2.9$
$\tau$	0.0972	$0.093^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.69	$7.86^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.196^{+0.049}_{-0.060}$
$\Omega_K$	0.0029	$-0.0008^{+0.0077}_{-0.0065}$	$A_{150}^{\text{PS, SPT}}$	10.03	$10.23 \pm 0.51$	$\Omega_m h^2$	0.14094	$0.1403 \pm 0.0024$
$n_s$	0.9637	$0.9642 \pm 0.0071$	$A_{220}^{\text{PS, SPT}}$	73.50	$74.7 \pm 4.5$	$\Omega_m h^3$	0.0982	$0.0958^{+0.0046}_{-0.0054}$
$\ln(10^{10} A_s)$	3.0996	$3.089^{+0.023}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.787	$0.834 \pm 0.087$	$Y_p$	0.247791	$0.24780 \pm 0.00012$
$A_{100}^{\text{PS}}$	204	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.533	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8270	$1.823 \pm 0.012$
$A_{143}^{\text{PS}}$	71.9	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9083	$0.934^{+0.023}_{-0.026}$	Age/Gyr	13.637	$13.80 \pm 0.32$
$A_{217}^{\text{PS}}$	59.5	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.425	$0.43 \pm 0.19$	$z_*$	1089.99	$1089.92 \pm 0.53$
$A_{143}^{\text{CIB}}$	3.10	$3.27 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.842	$0.84 \pm 0.19$	$r_*$	145.02	$145.17 \pm 0.57$
$A_{217}^{\text{CIB}}$	52.2	$50.1 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9922	$0.9929 \pm 0.0072$	$100\theta_*$	1.04173	$1.04175 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.40	$2.53^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0041	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.59	$1059.59 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.823 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9885	$0.9896 \pm 0.0071$	$r_{\text{drag}}$	147.73	$147.89 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9626	$0.965 \pm 0.010$	$k_D$	0.14000	$0.13985 \pm 0.00058$
$\gamma^{\text{CIB}}$	0.659	$0.645 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9855	$0.986 \pm 0.019$	$100\theta_D$	0.161192	$0.16120 \pm 0.00032$
$c_{100}$	1.000593	$1.00060 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9865	$0.9899 \pm 0.0097$	$z_{\text{eq}}$	3352	$3338 \pm 58$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0185	$1.027^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8225	$0.825 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.393$	$\Omega_\Lambda$	0.7068	$0.698^{+0.020}_{-0.018}$	$r_{\text{drag}}/D_V(0.57)$	0.07324	$0.0722 \pm 0.0022$
$A^{\text{kSZ}}$	1.42	$4.69^{+2.7}_{-2.1}$	$\Omega_m$	0.2904	$0.303^{+0.023}_{-0.026}$			

Best-fit  $\chi_{\text{eff}}^2 = 10946.38$ ; R-1 =0.02507

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lensing: 9.27 lowl: -6.58 CamSpec: 7809.82 highL: 691.45 SN - SNLS: 427.85



# 17 r

## 17.1 base\_r\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022048	$0.02207 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.525	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247702	$0.24771 \pm 0.00012$
$\Omega_c h^2$	0.12071	$0.1193 \pm 0.0027$	$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8434	$1.833 \pm 0.013$
$100\theta_{\text{MC}}$	1.04120	$1.04137 \pm 0.00064$	$c_{217}$	0.99646	$0.9964 \pm 0.0014$	Age/Gyr	13.8238	$13.810 \pm 0.048$
$\tau$	0.0926	$0.089^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.49	$1090.35 \pm 0.53$
$n_s$	0.9618	$0.9624 \pm 0.0075$	$A^{\text{kSZ}}$	0.50	$< 6.04$	$r_*$	144.48	$144.83 \pm 0.60$
$\ln(10^{10} A_s)$	3.0993	$3.087^{+0.024}_{-0.027}$	$\beta_1^1$	0.71	$0.52 \pm 0.57$	$100\theta_*$	1.04136	$1.04153 \pm 0.00063$
$r_{0.05}$	0.0000	$< 0.0563$	$\Omega_\Lambda$	0.6800	$0.688^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.32	$1059.27 \pm 0.57$
$A_{100}^{\text{PS}}$	152	$169 \pm 60$	$\Omega_m$	0.3200	$0.312^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.25	$147.60 \pm 0.59$
$A_{143}^{\text{PS}}$	65.7	$53 \pm 10$	$\sigma_8$	0.8363	$0.827 \pm 0.013$	$k_D$	0.14034	$0.14000 \pm 0.00063$
$A_{217}^{\text{PS}}$	124.0	$107^{+20}_{-10}$	$z_{\text{re}}$	11.38	$11.0 \pm 1.1$	$100\theta_D$	0.161344	$0.16138 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	66.94	$67.5 \pm 1.2$	$z_{\text{eq}}$	3411	$3379 \pm 60$
$A_{217}^{\text{CIB}}$	23.7	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0511$	$100\theta_{\text{eq}}$	0.8110	$0.817 \pm 0.011$
$A_{143}^{\text{tSZ}}$	6.02	—	$10^9 A_s$	2.218	$2.192^{+0.051}_{-0.060}$	$r_{\text{drag}}/D_V(0.57)$	0.07117	$0.07165 \pm 0.00091$
$r_{143 \times 217}^{\text{PS}}$	0.899	$> 0.851$	$\Omega_m h^2$	0.14341	$0.1420 \pm 0.0025$			
$r_{143 \times 217}^{\text{CIB}}$	0.752	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09600	$0.09587 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 9805.75$ ; R-1 = 0.00593

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.49 lowl: -6.67 CamSpec: 7797.16

## 17.2 base\_r\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022227	$0.02219 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.551	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247778	$0.24776 \pm 0.00012$
$\Omega_c h^2$	0.11830	$0.1181 \pm 0.0022$	$c_{100}$	1.000603	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8327	$1.828 \pm 0.011$
$100\theta_{\text{MC}}$	1.04148	$1.04148 \pm 0.00062$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.7875	$13.790 \pm 0.045$
$\tau$	0.0957	$0.090^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.052	$1090.09 \pm 0.47$
$n_s$	0.9669	$0.9653 \pm 0.0069$	$A^{\text{kSZ}}$	0.7	—	$r_*$	144.972	$145.05 \pm 0.49$
$\ln(10^{10} A_s)$	3.0998	$3.085^{+0.022}_{-0.025}$	$\beta_1^1$	0.62	$0.49 \pm 0.56$	$100\theta_*$	1.04162	$1.04163 \pm 0.00061$
$r_{0.05}$	0.0000	$< 0.0604$	$\Omega_\Lambda$	0.6950	$0.695 \pm 0.013$	$z_{\text{drag}}$	1059.55	$1059.46 \pm 0.57$
$A_{100}^{\text{PS}}$	151	$167 \pm 60$	$\Omega_m$	0.3050	$0.305 \pm 0.013$	$r_{\text{drag}}$	147.70	$147.78 \pm 0.50$
$A_{143}^{\text{PS}}$	64.0	$51 \pm 10$	$\sigma_8$	0.8300	$0.8221 \pm 0.0097$	$k_D$	0.14002	$0.13990 \pm 0.00056$
$A_{217}^{\text{PS}}$	117.7	$105^{+20}_{-10}$	$z_{\text{re}}$	11.53	$11.0 \pm 1.1$	$100\theta_D$	0.161208	$0.16127 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	68.03	$68.1 \pm 1.0$	$z_{\text{eq}}$	3357.8	$3353 \pm 49$
$A_{217}^{\text{CIB}}$	25.6	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0554$	$100\theta_{\text{eq}}$	0.8213	$0.8222 \pm 0.0095$
$A_{143}^{\text{tSZ}}$	6.08	—	$10^9 A_s$	2.219	$2.187^{+0.047}_{-0.056}$	$r_{\text{drag}}/D_V(0.57)$	0.07199	$0.07205 \pm 0.00076$
$r_{143 \times 217}^{\text{PS}}$	0.878	$> 0.848$	$\Omega_m h^2$	0.14117	$0.1410 \pm 0.0020$			
$r_{143 \times 217}^{\text{CIB}}$	0.777	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09604	$0.09594 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 9815.88$ ; R-1 = 0.00759

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.52 lensing: 9.89 lowl: -7.51 CamSpec: 7798.43

### 17.3 base\_r\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022165	$0.02212 \pm 0.00025$	$\gamma^{\text{CIB}}$	0.541	$0.53^{+0.14}_{-0.12}$	$Y_{\text{P}}$	0.247752	$0.24773 \pm 0.00011$
$\Omega_c h^2$	0.11882	$0.1185 \pm 0.0017$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8352	$1.8292 \pm 0.0095$
$100\theta_{\text{MC}}$	1.04145	$1.04148 \pm 0.00057$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.7966	$13.798 \pm 0.038$
$\tau$	0.0952	$0.091 \pm 0.013$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.176	$1090.20 \pm 0.40$
$n_s$	0.9661	$0.9643 \pm 0.0059$	$A^{\text{kSZ}}$	0.00	$< 6.01$	$r_*$	144.883	$145.00 \pm 0.43$
$\ln(10^{10} A_s)$	3.1002	$3.088 \pm 0.025$	$\beta_1^1$	0.68	$0.50 \pm 0.57$	$100\theta_*$	1.04160	$1.04163 \pm 0.00057$
$r_{0.05}$	0.0000	$< 0.0586$	$\Omega_{\Lambda}$	0.6918	$0.693 \pm 0.010$	$z_{\text{drag}}$	1059.44	$1059.33 \pm 0.55$
$A_{100}^{\text{PS}}$	146	$168 \pm 60$	$\Omega_{\text{m}}$	0.3082	$0.307 \pm 0.010$	$r_{\text{drag}}$	147.626	$147.76 \pm 0.45$
$A_{143}^{\text{PS}}$	61.8	$53 \pm 10$	$\sigma_8$	0.8313	$0.825 \pm 0.012$	$k_{\text{D}}$	0.14004	$0.13987 \pm 0.00055$
$A_{217}^{\text{PS}}$	123.7	$107^{+20}_{-10}$	$z_{\text{re}}$	11.52	$11.1 \pm 1.1$	$100\theta_{\text{D}}$	0.161275	$0.16135 \pm 0.00032$
$A_{143}^{\text{CIB}}$	0.9	$< 10.5$	$H_0$	67.79	$67.88 \pm 0.78$	$z_{\text{eq}}$	3368.9	$3360 \pm 40$
$A_{217}^{\text{CIB}}$	24.0	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0535$	$100\theta_{\text{eq}}$	0.8191	$0.8207 \pm 0.0075$
$A_{143}^{\text{tSZ}}$	6.62	—	$10^9 A_s$	2.220	$2.193^{+0.052}_{-0.060}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07182	$0.07192 \pm 0.00059$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.850$	$\Omega_{\text{m}} h^2$	0.14163	$0.1413 \pm 0.0017$			
$r_{143 \times 217}^{\text{CIB}}$	0.000	$0.42 \pm 0.22$	$\Omega_{\text{m}} h^3$	0.09600	$0.09588 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 9807.15$ ; R-1 = 0.00665

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.29 DR7: 1.12 6DF: 0.01 CMB - lowLike: 2014.53 lowl: -7.41 CamSpec: 7797.97

## 17.4 base\_r\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022298	$0.02228 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.547	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247809	$0.24780 \pm 0.00012$
$\Omega_c h^2$	0.11721	$0.1167 \pm 0.0024$	$c_{100}$	1.000599	$1.00060 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8283	$1.821 \pm 0.012$
$100\theta_{\text{MC}}$	1.04174	$1.04177 \pm 0.00062$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	Age/Gyr	13.7676	$13.766 \pm 0.045$
$\tau$	0.0973	$0.094^{+0.013}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.15	—	$z_*$	1089.865	$1089.85 \pm 0.48$
$n_s$	0.9696	$0.9688 \pm 0.0072$	$A^{\text{kSZ}}$	0.57	$< 6.01$	$r_*$	145.20	$145.35 \pm 0.55$
$\ln(10^{10} A_s)$	3.1006	$3.090^{+0.024}_{-0.028}$	$\beta_1^1$	0.61	$0.45 \pm 0.57$	$100\theta_*$	1.04188	$1.04191 \pm 0.00061$
$r_{0.05}$	0.0000	$< 0.0663$	$\Omega_\Lambda$	0.7019	$0.704^{+0.015}_{-0.013}$	$z_{\text{drag}}$	1059.63	$1059.57 \pm 0.57$
$A_{100}^{\text{PS}}$	153	$165 \pm 60$	$\Omega_m$	0.2981	$0.296^{+0.013}_{-0.015}$	$r_{\text{drag}}$	147.91	$148.07 \pm 0.55$
$A_{143}^{\text{PS}}$	65.2	$52 \pm 10$	$\sigma_8$	0.8265	$0.820 \pm 0.013$	$k_D$	0.13985	$0.13967 \pm 0.00061$
$A_{217}^{\text{PS}}$	119.7	$106^{+20}_{-10}$	$z_{\text{re}}$	11.61	$11.3 \pm 1.1$	$100\theta_D$	0.161185	$0.16124 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	68.57	$68.8 \pm 1.1$	$z_{\text{eq}}$	3333	$3321 \pm 54$
$A_{217}^{\text{CIB}}$	24.9	$28^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0617$	$100\theta_{\text{eq}}$	0.8262	$0.829 \pm 0.011$
$A_{143}^{\text{tSZ}}$	5.65	—	$10^9 A_s$	2.221	$2.198^{+0.052}_{-0.062}$	$r_{\text{drag}}/D_V(0.57)$	0.07241	$0.07259 \pm 0.00084$
$r_{143 \times 217}^{\text{PS}}$	0.899	$> 0.851$	$\Omega_m h^2$	0.14015	$0.1396 \pm 0.0022$			
$r_{143 \times 217}^{\text{CIB}}$	0.533	$0.41 \pm 0.22$	$\Omega_m h^3$	0.09610	$0.09598 \pm 0.00058$			

Best-fit  $\chi_{\text{eff}}^2 = 9811.69$ ; R-1 = 0.01093

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.54 lowl: -7.89 CamSpec: 7799.69 Hubble - HST: 4.76

## 17.5 base\_r\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022210	$0.02219 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.538	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247771	$0.24776 \pm 0.00012$
$\Omega_c h^2$	0.11822	$0.1176 \pm 0.0025$	$c_{100}$	1.000609	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8321	$1.825 \pm 0.012$
$100\theta_{\text{MC}}$	1.04149	$1.04160 \pm 0.00063$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.7884	$13.784 \pm 0.047$
$\tau$	0.0956	$0.092^{+0.013}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.19	—	$z_*$	1090.07	$1090.04 \pm 0.50$
$n_s$	0.9671	$0.9664 \pm 0.0073$	$A^{\text{kSZ}}$	0.52	$< 6.02$	$r_*$	145.01	$145.18 \pm 0.56$
$\ln(10^{10} A_s)$	3.0993	$3.089^{+0.024}_{-0.027}$	$\beta_1^1$	0.60	$0.47 \pm 0.57$	$100\theta_*$	1.04164	$1.04175 \pm 0.00062$
$r_{0.05}$	0.0000	$< 0.0625$	$\Omega_\Lambda$	0.6954	$0.699 \pm 0.015$	$z_{\text{drag}}$	1059.51	$1059.42 \pm 0.57$
$A_{100}^{\text{PS}}$	149	$167 \pm 60$	$\Omega_m$	0.3046	$0.301 \pm 0.015$	$r_{\text{drag}}$	147.74	$147.92 \pm 0.56$
$A_{143}^{\text{PS}}$	64.9	$52 \pm 10$	$\sigma_8$	0.8289	$0.822 \pm 0.013$	$k_D$	0.13996	$0.13975 \pm 0.00061$
$A_{217}^{\text{PS}}$	122.1	$106^{+20}_{-10}$	$z_{\text{re}}$	11.52	$11.2 \pm 1.1$	$100\theta_D$	0.161236	$0.16131 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	68.05	$68.3 \pm 1.1$	$z_{\text{eq}}$	3356	$3340 \pm 55$
$A_{217}^{\text{CIB}}$	24.2	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0576$	$100\theta_{\text{eq}}$	0.8217	$0.825 \pm 0.011$
$A_{143}^{\text{tSZ}}$	5.92	—	$10^9 A_s$	2.218	$2.195^{+0.052}_{-0.061}$	$r_{\text{drag}}/D_V(0.57)$	0.07202	$0.07225 \pm 0.00086$
$r_{143 \times 217}^{\text{PS}}$	0.909	$> 0.851$	$\Omega_m h^2$	0.14107	$0.1404 \pm 0.0023$			
$r_{143 \times 217}^{\text{CIB}}$	0.500	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09600	$0.09590 \pm 0.00058$			

Best-fit  $\chi_{\text{eff}}^2 = 10235.07$ ; R-1 = 0.00824

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.50 lowl: -7.59 CamSpec: 7798.58 SN - SNLS: 428.92

## 17.6 base\_r\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022145	$0.02211 \pm 0.00028$	$\gamma^{\text{CIB}}$	0.541	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247744	$0.24773 \pm 0.00012$
$\Omega_c h^2$	0.11927	$0.1187 \pm 0.0025$	$c_{100}$	1.000600	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8374	$1.830 \pm 0.012$
$100\theta_{\text{MC}}$	1.04140	$1.04145 \pm 0.00063$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.8023	$13.801 \pm 0.047$
$\tau$	0.0947	$0.090^{+0.012}_{-0.014}$	$\xi^{\text{tSZ-CIB}}$	0.27	—	$z_*$	1090.24	$1090.24 \pm 0.51$
$n_s$	0.9650	$0.9638 \pm 0.0073$	$A^{\text{kSZ}}$	0.55	$< 6.02$	$r_*$	144.78	$144.95 \pm 0.57$
$\ln(10^{10} A_s)$	3.1003	$3.087^{+0.024}_{-0.027}$	$\beta_1^1$	0.68	$0.50 \pm 0.57$	$100\theta_*$	1.04155	$1.04160 \pm 0.00062$
$r_{0.05}$	0.0000	$< 0.0582$	$\Omega_\Lambda$	0.6890	$0.692 \pm 0.015$	$z_{\text{drag}}$	1059.44	$1059.32 \pm 0.57$
$A_{100}^{\text{PS}}$	148	$168 \pm 60$	$\Omega_m$	0.3110	$0.308 \pm 0.015$	$r_{\text{drag}}$	147.53	$147.71 \pm 0.57$
$A_{143}^{\text{PS}}$	63.9	$53 \pm 10$	$\sigma_8$	0.8326	$0.825 \pm 0.012$	$k_D$	0.14013	$0.13991 \pm 0.00062$
$A_{217}^{\text{PS}}$	123.2	$107^{+20}_{-10}$	$z_{\text{re}}$	11.49	$11.1 \pm 1.1$	$100\theta_D$	0.161279	$0.16136 \pm 0.00033$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	67.59	$67.8 \pm 1.1$	$z_{\text{eq}}$	3379	$3366 \pm 57$
$A_{217}^{\text{CIB}}$	23.7	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0530$	$100\theta_{\text{eq}}$	0.8172	$0.820 \pm 0.011$
$A_{143}^{\text{tSZ}}$	6.13	—	$10^9 A_s$	2.220	$2.193^{+0.051}_{-0.060}$	$r_{\text{drag}}/D_V(0.57)$	0.07166	$0.07185 \pm 0.00087$
$r_{143 \times 217}^{\text{PS}}$	0.928	$> 0.851$	$\Omega_m h^2$	0.14206	$0.1415 \pm 0.0024$			
$r_{143 \times 217}^{\text{CIB}}$	0.407	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09602	$0.09588 \pm 0.00057$			

Best-fit  $\chi_{\text{eff}}^2 = 9936.20$ ; R-1 = 0.00652

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.53 lowl: -7.22 CamSpec: 7797.82 SN - Union2.1: 130.44

## 17.7 base\_r\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022071	$0.02210 \pm 0.00027$	$\beta_1^1$	0.42	$0.37 \pm 0.55$	$\sigma_8$	0.8308	$0.826 \pm 0.012$
$\Omega_c h^2$	0.11980	$0.1194 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.38	$10.53 \pm 0.59$	$z_{\text{re}}$	11.43	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04127	$1.04137 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.60	$76.8 \pm 4.5$	$H_0$	67.30	$67.5 \pm 1.2$
$\tau$	0.0935	$0.090^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.46	$7.64^{+1.4}_{-1.6}$	$r_{0.002}$	0.0000	$< 0.0457$
$n_s$	0.9590	$0.9600 \pm 0.0072$	$A_{150}^{\text{PS, SPT}}$	9.900	$10.07 \pm 0.51$	$10^9 A_s$	2.210	$2.192^{+0.051}_{-0.059}$
$\ln(10^{10} A_s)$	3.0957	$3.087 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	73.50	$74.3 \pm 4.5$	$\Omega_m h^2$	0.14252	$0.1421 \pm 0.0025$
$r_{0.05}$	0.0000	$< 0.0509$	$r_{95 \times 150}^{\text{PS}}$	0.788	$0.831 \pm 0.089$	$\Omega_m h^3$	0.09592	$0.09593 \pm 0.00056$
$A_{100}^{\text{PS}}$	206	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.546	$0.59^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247712	$0.24772 \pm 0.00012$
$A_{143}^{\text{PS}}$	72.8	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9149	$0.937 \pm 0.023$	$10^9 A_s e^{-2\tau}$	1.8333	$1.831 \pm 0.013$
$A_{217}^{\text{PS}}$	60.7	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.44 \pm 0.19$	Age/Gyr	13.8155	$13.808 \pm 0.047$
$A_{143}^{\text{CIB}}$	3.05	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.85 \pm 0.20$	$z_*$	1090.38	$1090.32 \pm 0.51$
$A_{217}^{\text{CIB}}$	51.2	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9915	$0.9924 \pm 0.0072$	$r_*$	144.70	$144.79 \pm 0.59$
$A_{143}^{\text{tSZ}}$	4.05	$2.54^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.006 \pm 0.013$	$100\theta_*$	1.04144	$1.04153 \pm 0.00061$
$r_{143 \times 217}^{\text{PS}}$	0.813	$0.821^{+0.070}_{-0.078}$	$y_{148}^{\text{ACTe}}$	0.9877	$0.9888 \pm 0.0071$	$z_{\text{drag}}$	1059.32	$1059.33 \pm 0.55$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9618	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.47	$147.55 \pm 0.59$
$\gamma^{\text{CIB}}$	0.648	$0.640 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9834	$0.984 \pm 0.019$	$k_{\text{D}}$	0.14014	$0.14007 \pm 0.00062$
$c_{100}$	1.000586	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9878 \pm 0.0095$	$100\theta_{\text{D}}$	0.161350	$0.16135 \pm 0.00032$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0174	$1.024 \pm 0.023$	$z_{\text{eq}}$	3390	$3381 \pm 59$
$\xi^{\text{tSZ-CIB}}$	0.046	$< 0.404$	$\Omega_{\Lambda}$	0.6854	$0.688^{+0.017}_{-0.016}$	$100\theta_{\text{eq}}$	0.8149	$0.817 \pm 0.011$
$A^{\text{kSZ}}$	2.85	$5.34^{+2.7}_{-1.9}$	$\Omega_{\text{m}}$	0.3146	$0.312^{+0.016}_{-0.017}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07146	$0.07163 \pm 0.00090$

Best-fit  $\chi_{\text{eff}}^2 = 10509.04$ ; R-1 =0.00529

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.51 lowl: -6.15 CamSpec: 7808.10 highL: 692.46

## 17.8 base\_r\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022206	$0.02219 \pm 0.00026$	$\beta_1^1$	0.44	$0.36 \pm 0.55$	$\sigma_8$	0.8278	$0.8224 \pm 0.0096$
$\Omega_c h^2$	0.11857	$0.1184 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.67 \pm 0.59$	$z_{\text{re}}$	11.45	$11.0 \pm 1.0$
$100\theta_{\text{MC}}$	1.04146	$1.04147 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	75.96	$77.0 \pm 4.5$	$H_0$	67.91	$68.0 \pm 1.0$
$\tau$	0.0946	$0.090^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.42	$7.86^{+1.4}_{-1.7}$	$r_{0.002}$	0.0000	$< 0.0495$
$n_s$	0.9619	$0.9626 \pm 0.0065$	$A_{150}^{\text{PS, SPT}}$	9.913	$10.23 \pm 0.50$	$10^9 A_s$	2.210	$2.188^{+0.047}_{-0.054}$
$\ln(10^{10} A_s)$	3.0957	$3.085 \pm 0.023$	$A_{220}^{\text{PS, SPT}}$	72.77	$74.6 \pm 4.5$	$\Omega_m h^2$	0.14142	$0.1412 \pm 0.0021$
$r_{0.05}$	0.0000	$< 0.0545$	$r_{95 \times 150}^{\text{PS}}$	0.812	$0.830 \pm 0.088$	$\Omega_m h^3$	0.09604	$0.09598 \pm 0.00056$
$A_{100}^{\text{PS}}$	206	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.564	$0.58^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247770	$0.24776 \pm 0.00011$
$A_{143}^{\text{PS}}$	72.1	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9071	$0.934 \pm 0.023$	$10^9 A_s e^{-2\tau}$	1.8293	$1.827 \pm 0.011$
$A_{217}^{\text{PS}}$	60.0	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.415	$0.43 \pm 0.19$	Age/Gyr	13.7910	$13.792 \pm 0.043$
$A_{143}^{\text{CIB}}$	3.42	$3.23 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.850	$0.84 \pm 0.20$	$z_*$	1090.103	$1090.12 \pm 0.46$
$A_{217}^{\text{CIB}}$	53.1	$49.9 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9929 \pm 0.0074$	$r_*$	144.92	$144.98 \pm 0.50$
$A_{143}^{\text{tSZ}}$	4.97	$2.52^{+1.2}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0029	$1.006 \pm 0.013$	$100\theta_*$	1.04161	$1.04162 \pm 0.00060$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.822^{+0.070}_{-0.082}$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9893 \pm 0.0072$	$z_{\text{drag}}$	1059.51	$1059.47 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9615	$0.965 \pm 0.010$	$r_{\text{drag}}$	147.65	$147.71 \pm 0.51$
$\gamma^{\text{CIB}}$	0.664	$0.642 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9852	$0.985^{+0.019}_{-0.021}$	$k_{\text{D}}$	0.14005	$0.13997 \pm 0.00057$
$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9865	$0.9892 \pm 0.0095$	$100\theta_{\text{D}}$	0.161227	$0.16126 \pm 0.00031$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0173	$1.026 \pm 0.023$	$z_{\text{eq}}$	3363.8	$3359 \pm 49$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.379$	$\Omega_{\Lambda}$	0.6934	$0.694 \pm 0.013$	$100\theta_{\text{eq}}$	0.8202	$0.8211 \pm 0.0095$
$A^{\text{kSZ}}$	0.64	$4.72^{+2.6}_{-2.0}$	$\Omega_{\text{m}}$	0.3066	$0.306 \pm 0.013$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07190	$0.07196 \pm 0.00076$

Best-fit  $\chi_{\text{eff}}^2 = 10517.60$ ; R-1 = 0.01080

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lensing: 9.60 lowl: -6.68 CamSpec: 7808.62 highL: 691.48



## 17.9 base\_r\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022147	$0.02215 \pm 0.00024$	$\beta_1^1$	0.42	$0.36 \pm 0.55$	$\sigma_8$	0.8284	$0.824 \pm 0.011$
$\Omega_c h^2$	0.11881	$0.1186 \pm 0.0017$	$A_{148}^{\text{PS, ACT}}$	10.26	$10.53 \pm 0.59$	$z_{\text{re}}$	11.52	$11.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.04143	$1.04148 \pm 0.00056$	$A_{218}^{\text{PS, ACT}}$	75.95	$76.8 \pm 4.5$	$H_0$	67.77	$67.88 \pm 0.77$
$\tau$	0.0952	$0.091^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.03	$7.65^{+1.4}_{-1.6}$	$r_{0.002}$	0.0000	$< 0.0479$
$n_s$	0.9615	$0.9619 \pm 0.0055$	$A_{150}^{\text{PS, SPT}}$	9.74	$10.07 \pm 0.51$	$10^9 A_s$	2.213	$2.194^{+0.052}_{-0.059}$
$\ln(10^{10} A_s)$	3.0968	$3.088 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	72.84	$74.3 \pm 4.5$	$\Omega_m h^2$	0.14161	$0.1414 \pm 0.0017$
$r_{0.05}$	0.0000	$< 0.0531$	$r_{95 \times 150}^{\text{PS}}$	0.821	$0.830 \pm 0.089$	$\Omega_m h^3$	0.09596	$0.09595 \pm 0.00056$
$A_{100}^{\text{PS}}$	202	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.576	$0.59^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247744	$0.24775 \pm 0.00010$
$A_{143}^{\text{PS}}$	72.0	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9097	$0.937 \pm 0.024$	$10^9 A_s e^{-2\tau}$	1.8291	$1.8271 \pm 0.0093$
$A_{217}^{\text{PS}}$	60.6	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.435	$0.43 \pm 0.19$	Age/Gyr	13.7990	$13.796 \pm 0.037$
$A_{143}^{\text{CIB}}$	3.47	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.84 \pm 0.20$	$z_*$	1090.202	$1090.18 \pm 0.39$
$A_{217}^{\text{CIB}}$	52.8	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9926 \pm 0.0073$	$r_*$	144.899	$144.96 \pm 0.42$
$A_{143}^{\text{tSZ}}$	5.16	$2.56^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0019	$1.006 \pm 0.013$	$100\theta_*$	1.04158	$1.04164 \pm 0.00055$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.821^{+0.069}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9890 \pm 0.0072$	$z_{\text{drag}}$	1059.40	$1059.40 \pm 0.53$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9601	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.648	$147.71 \pm 0.45$
$\gamma^{\text{CIB}}$	0.658	$0.640 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9852	$0.985 \pm 0.019$	$k_{\text{D}}$	0.14001	$0.13994 \pm 0.00054$
$c_{100}$	1.000586	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9851	$0.9882 \pm 0.0095$	$100\theta_{\text{D}}$	0.161295	$0.16131 \pm 0.00031$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0176	$1.025 \pm 0.023$	$z_{\text{eq}}$	3368.3	$3362 \pm 40$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.398$	$\Omega_{\Lambda}$	0.6916	$0.693 \pm 0.010$	$100\theta_{\text{eq}}$	0.8192	$0.8204 \pm 0.0075$
$A^{\text{kSZ}}$	1.03	$5.32^{+2.7}_{-1.9}$	$\Omega_{\text{m}}$	0.3084	$0.307 \pm 0.010$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07181	$0.07191 \pm 0.00059$

Best-fit  $\chi_{\text{eff}}^2 = 10510.96$ ; R-1 = 0.00660

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.13 DR9: 0.29 6DF: 0.01 CMB - lowLike: 2014.54 lowl: -6.64 CamSpec: 7808.34 highL: 693.15

## 17.10 base\_r\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022227	$0.02229 \pm 0.00026$	$\beta_1^1$	0.37	$0.32 \pm 0.55$	$\sigma_8$	0.8255	$0.820 \pm 0.012$
$\Omega_c h^2$	0.11773	$0.1168 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.55 \pm 0.59$	$z_{\text{re}}$	11.60	$11.3 \pm 1.1$
$100\theta_{\text{MC}}$	1.04167	$1.04175 \pm 0.00060$	$A_{218}^{\text{PS, ACT}}$	76.14	$77.0 \pm 4.5$	$H_0$	68.29	$68.7 \pm 1.1$
$\tau$	0.0967	$0.094 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.11	$7.66^{+1.4}_{-1.6}$	$r_{0.002}$	0.0000	$< 0.0528$
$n_s$	0.9640	$0.9662 \pm 0.0068$	$A_{150}^{\text{PS, SPT}}$	9.811	$10.11 \pm 0.50$	$10^9 A_s$	2.214	$2.198 \pm 0.056$
$\ln(10^{10} A_s)$	3.0973	$3.090 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	72.90	$74.4 \pm 4.5$	$\Omega_m h^2$	0.14060	$0.1398 \pm 0.0023$
$r_{0.05}$	0.0000	$< 0.0576$	$r_{95 \times 150}^{\text{PS}}$	0.815	$0.830^{+0.11}_{-0.090}$	$\Omega_m h^3$	0.09602	$0.09602 \pm 0.00056$
$A_{100}^{\text{PS}}$	201	$210 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.568	$0.59^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247779	$0.24781 \pm 0.00011$
$A_{143}^{\text{PS}}$	71.6	$71 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9102	$0.938 \pm 0.023$	$10^9 A_s e^{-2\tau}$	1.8243	$1.820 \pm 0.012$
$A_{217}^{\text{PS}}$	59.9	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.43 \pm 0.19$	Age/Gyr	13.7795	$13.766 \pm 0.043$
$A_{143}^{\text{CIB}}$	3.35	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.850	$0.84 \pm 0.20$	$z_*$	1090.002	$1089.85 \pm 0.46$
$A_{217}^{\text{CIB}}$	52.7	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9934 \pm 0.0073$	$r_*$	145.12	$145.31 \pm 0.55$
$A_{143}^{\text{tSZ}}$	4.95	$2.57^{+1.2}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0026	$1.007 \pm 0.013$	$100\theta_*$	1.04181	$1.04189 \pm 0.00059$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.819^{+0.071}_{-0.082}$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9897 \pm 0.0072$	$z_{\text{drag}}$	1059.51	$1059.60 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9613	$0.965 \pm 0.010$	$r_{\text{drag}}$	147.85	$148.02 \pm 0.56$
$\gamma^{\text{CIB}}$	0.660	$0.641 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9850	$0.986 \pm 0.019$	$k_{\text{D}}$	0.13986	$0.13973 \pm 0.00061$
$c_{100}$	1.000588	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9857	$0.9894 \pm 0.0095$	$100\theta_{\text{D}}$	0.161254	$0.16121 \pm 0.00031$
$c_{217}$	0.99726	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0165	$1.025 \pm 0.023$	$z_{\text{eq}}$	3344	$3324 \pm 54$
$\xi^{\text{tSZ-CIB}}$	0.002	$< 0.397$	$\Omega_{\Lambda}$	0.6985	$0.704^{+0.015}_{-0.013}$	$100\theta_{\text{eq}}$	0.8240	$0.828 \pm 0.011$
$A^{\text{kSZ}}$	1.38	$5.31^{+2.7}_{-2.0}$	$\Omega_{\text{m}}$	0.3015	$0.296 \pm 0.014$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07221	$0.07254 \pm 0.00083$

Best-fit  $\chi_{\text{eff}}^2 = 10515.28$ ; R-1 = 0.01134

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.58 lowl: -7.09 CamSpec: 7809.51 highL: 692.90 Hubble - HST: 5.25

### 17.11 base\_r\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022173	$0.02221 \pm 0.00026$	$\beta_1^1$	0.42	$0.34 \pm 0.55$	$\sigma_8$	0.8273	$0.822 \pm 0.012$
$\Omega_c h^2$	0.11847	$0.1177 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.25	$10.54 \pm 0.59$	$z_{\text{re}}$	11.52	$11.2 \pm 1.1$
$100\theta_{\text{MC}}$	1.04150	$1.04159 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	76.15	$76.9 \pm 4.5$	$H_0$	67.93	$68.3 \pm 1.1$
$\tau$	0.0954	$0.093^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.19	$7.65^{+1.4}_{-1.6}$	$r_{0.002}$	0.0000	$< 0.0504$
$n_s$	0.9621	$0.9639 \pm 0.0069$	$A_{150}^{\text{PS, SPT}}$	9.78	$10.09 \pm 0.50$	$10^9 A_s$	2.212	$2.196^{+0.053}_{-0.060}$
$\ln(10^{10} A_s)$	3.0965	$3.089 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	72.75	$74.4 \pm 4.5$	$\Omega_m h^2$	0.14128	$0.1406 \pm 0.0023$
$r_{0.05}$	0.0000	$< 0.0552$	$r_{95 \times 150}^{\text{PS}}$	0.804	$0.830^{+0.10}_{-0.091}$	$\Omega_m h^3$	0.09598	$0.09595 \pm 0.00056$
$A_{100}^{\text{PS}}$	203	$211 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.559	$0.59^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247755	$0.24777 \pm 0.00011$
$A_{143}^{\text{PS}}$	71.7	$71 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9115	$0.937 \pm 0.023$	$10^9 A_s e^{-2\tau}$	1.8278	$1.823 \pm 0.012$
$A_{217}^{\text{PS}}$	59.9	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.429	$0.43 \pm 0.19$	Age/Gyr	13.7930	$13.783 \pm 0.045$
$A_{143}^{\text{CIB}}$	3.29	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.84 \pm 0.20$	$z_*$	1090.136	$1090.03 \pm 0.48$
$A_{217}^{\text{CIB}}$	52.6	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9918	$0.9929 \pm 0.0073$	$r_*$	144.97	$145.14 \pm 0.56$
$A_{143}^{\text{tSZ}}$	4.82	$2.56^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0033	$1.006 \pm 0.013$	$100\theta_*$	1.04165	$1.04174 \pm 0.00060$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.820^{+0.070}_{-0.081}$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9893 \pm 0.0072$	$z_{\text{drag}}$	1059.44	$1059.47 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9616	$0.965 \pm 0.010$	$r_{\text{drag}}$	147.71	$147.88 \pm 0.56$
$\gamma^{\text{CIB}}$	0.660	$0.640 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9847	$0.985 \pm 0.019$	$k_{\text{D}}$	0.13996	$0.13982 \pm 0.00061$
$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9853	$0.9887 \pm 0.0095$	$100\theta_{\text{D}}$	0.161281	$0.16128 \pm 0.00031$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0169	$1.025 \pm 0.023$	$z_{\text{eq}}$	3361	$3344 \pm 55$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.398$	$\Omega_{\Lambda}$	0.6938	$0.698 \pm 0.015$	$100\theta_{\text{eq}}$	0.8207	$0.824 \pm 0.011$
$A^{\text{kSZ}}$	1.58	$5.33^{+2.7}_{-2.0}$	$\Omega_{\text{m}}$	0.3062	$0.302 \pm 0.015$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07194	$0.07221 \pm 0.00085$

Best-fit  $\chi_{\text{eff}}^2 = 10938.55$ ; R-1 =0.00712

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.54 lowl: -6.76 CamSpec: 7808.82 highL: 692.80 SN - SNLS: 429.06

## 17.12 base\_r\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022131	$0.02214 \pm 0.00027$	$\beta_1^1$	0.40	$0.36 \pm 0.55$	$\sigma_8$	0.8291	$0.825 \pm 0.012$
$\Omega_c h^2$	0.11905	$0.1188 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.53 \pm 0.59$	$z_{\text{re}}$	11.52	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04145	$1.04145 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	75.81	$76.9 \pm 4.5$	$H_0$	67.67	$67.8 \pm 1.1$
$\tau$	0.0950	$0.091^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.36	$7.65^{+1.4}_{-1.6}$	$r_{0.002}$	0.0000	$< 0.0472$
$n_s$	0.9607	$0.9613 \pm 0.0069$	$A_{150}^{\text{PS, SPT}}$	9.76	$10.07 \pm 0.51$	$10^9 A_s$	2.213	$2.193^{+0.051}_{-0.059}$
$\ln(10^{10} A_s)$	3.0969	$3.088 \pm 0.025$	$A_{220}^{\text{PS, SPT}}$	72.68	$74.3 \pm 4.5$	$\Omega_m h^2$	0.14182	$0.1416 \pm 0.0024$
$r_{0.05}$	0.0000	$< 0.0524$	$r_{95 \times 150}^{\text{PS}}$	0.796	$0.830 \pm 0.089$	$\Omega_m h^3$	0.09598	$0.09594 \pm 0.00056$
$A_{100}^{\text{PS}}$	204	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.550	$0.59^{+0.11}_{-0.13}$	$Y_{\text{P}}$	0.247737	$0.24774 \pm 0.00011$
$A_{143}^{\text{PS}}$	72.8	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9102	$0.937 \pm 0.024$	$10^9 A_s e^{-2\tau}$	1.8301	$1.828 \pm 0.012$
$A_{217}^{\text{PS}}$	59.9	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.418	$0.44 \pm 0.19$	Age/Gyr	13.8013	$13.799 \pm 0.045$
$A_{143}^{\text{CIB}}$	3.26	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.832	$0.84 \pm 0.20$	$z_*$	1090.243	$1090.22 \pm 0.49$
$A_{217}^{\text{CIB}}$	52.8	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9913	$0.9926 \pm 0.0073$	$r_*$	144.85	$144.91 \pm 0.57$
$A_{143}^{\text{tSZ}}$	4.68	$2.55^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0027	$1.006 \pm 0.013$	$100\theta_*$	1.04160	$1.04160 \pm 0.00060$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.821^{+0.070}_{-0.080}$	$y_{148}^{\text{ACTe}}$	0.9875	$0.9890 \pm 0.0072$	$z_{\text{drag}}$	1059.40	$1059.38 \pm 0.54$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9613	$0.964 \pm 0.010$	$r_{\text{drag}}$	147.60	$147.66 \pm 0.57$
$\gamma^{\text{CIB}}$	0.663	$0.640 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9827	$0.985 \pm 0.019$	$k_{\text{D}}$	0.14004	$0.13998 \pm 0.00061$
$c_{100}$	1.000589	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9845	$0.9881 \pm 0.0096$	$100\theta_{\text{D}}$	0.161313	$0.16132 \pm 0.00032$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0175	$1.024 \pm 0.023$	$z_{\text{eq}}$	3373	$3368 \pm 57$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.399$	$\Omega_{\Lambda}$	0.6903	$0.691^{+0.016}_{-0.015}$	$100\theta_{\text{eq}}$	0.8182	$0.819 \pm 0.011$
$A^{\text{kSZ}}$	1.71	$5.32^{+2.7}_{-2.0}$	$\Omega_{\text{m}}$	0.3097	$0.309 \pm 0.015$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07174	$0.07182 \pm 0.00086$

Best-fit  $\chi_{\text{eff}}^2 = 10639.69$ ; R-1 =0.00561

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.56 lowl: -6.46 CamSpec: 7808.44 highL: 692.68 SN - Union2.1: 130.40

### 17.13 base\_r\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022056	$0.02209 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.544	$0.53 \pm 0.13$	$Y_P$	0.247705	$0.24772 \pm 0.00014$
$\Omega_c h^2$	0.11972	$0.1193 \pm 0.0031$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8394	$1.832 \pm 0.015$
$100\theta_{\text{MC}}$	1.04128	$1.04138 \pm 0.00068$	$c_{217}$	0.99655	$0.9964 \pm 0.0014$	Age/Gyr	13.817	$13.808 \pm 0.058$
$\tau$	0.0942	$0.094 \pm 0.038$	$\xi^{\text{tSZ-CIB}}$	0.57	—	$z_*$	1090.40	$1090.33 \pm 0.64$
$n_s$	0.9636	$0.9630 \pm 0.0094$	$A^{\text{kSZ}}$	0.52	$< 5.99$	$r_*$	144.73	$144.84 \pm 0.67$
$\ln(10^{10} A_s)$	3.100	$3.096 \pm 0.071$	$\beta_1^1$	0.66	$0.50 \pm 0.57$	$100\theta_*$	1.04144	$1.04154 \pm 0.00066$
$r_{0.05}$	0.0000	$< 0.0489$	$\Omega_\Lambda$	0.6858	$0.688^{+0.021}_{-0.019}$	$z_{\text{drag}}$	1059.25	$1059.30 \pm 0.64$
$A_{100}^{\text{PS}}$	177	$167 \pm 60$	$\Omega_m$	0.3142	$0.312 \pm 0.019$	$r_{\text{drag}}$	147.51	$147.60 \pm 0.64$
$A_{143}^{\text{PS}}$	72.7	$53 \pm 10$	$\sigma_8$	0.8340	$0.830 \pm 0.027$	$k_D$	0.14008	$0.14000 \pm 0.00065$
$A_{217}^{\text{PS}}$	121.8	$107^{+20}_{-10}$	$z_{\text{re}}$	11.50	$11.2^{+3.9}_{-2.9}$	$100\theta_D$	0.161375	$0.16137 \pm 0.00037$
$A_{143}^{\text{CIB}}$	0.0	$< 10.4$	$H_0$	67.32	$67.6 \pm 1.4$	$z_{\text{eq}}$	3388	$3378 \pm 70$
$A_{217}^{\text{CIB}}$	24.7	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0441$	$100\theta_{\text{eq}}$	0.8153	$0.818 \pm 0.013$
$A_{143}^{\text{tSZ}}$	3.55	—	$10^9 A_s$	2.221	$2.22^{+0.15}_{-0.18}$	$r_{\text{drag}}/D_V(0.57)$	0.07149	$0.0717 \pm 0.0011$
$r_{143 \times 217}^{\text{PS}}$	0.925	$> 0.850$	$\Omega_m h^2$	0.14242	$0.1420 \pm 0.0029$			
$r_{143 \times 217}^{\text{CIB}}$	0.559	$0.42 \pm 0.23$	$\Omega_m h^3$	0.09588	$0.09589 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7791.55$ ; R-1 = 0.00629

$\chi^2_{\text{eff}}$ : CMB - lowl: -6.96 CamSpec: 7797.90

### 17.14 base\_r\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022256	$0.02219 \pm 0.00033$	$\gamma^{\text{CIB}}$	0.561	$0.53 \pm 0.13$	$Y_{\text{P}}$	0.247791	$0.24776 \pm 0.00014$
$\Omega_c h^2$	0.11784	$0.1182 \pm 0.0031$	$c_{100}$	1.000620	$1.00059 \pm 0.00041$	$10^9 A_s e^{-2\tau}$	1.8308	$1.828 \pm 0.015$
$100\theta_{\text{MC}}$	1.04159	$1.04148 \pm 0.00068$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.779	$13.790 \pm 0.059$
$\tau$	0.0966	$0.090 \pm 0.031$	$\xi^{\text{tSZ-CIB}}$	0.26	—	$z_*$	1089.98	$1090.10 \pm 0.64$
$n_s$	0.9682	$0.9652 \pm 0.0095$	$A^{\text{kSZ}}$	1.36	$< 6.19$	$r_*$	145.07	$145.03 \pm 0.66$
$\ln(10^{10} A_s)$	3.100	$3.086 \pm 0.056$	$\beta_1^1$	0.61	$0.49 \pm 0.56$	$100\theta_*$	1.04173	$1.04163 \pm 0.00067$
$r_{0.05}$	0.0000	$< 0.0537$	$\Omega_{\Lambda}$	0.6979	$0.695^{+0.021}_{-0.019}$	$z_{\text{drag}}$	1059.59	$1059.45 \pm 0.64$
$A_{100}^{\text{PS}}$	158	$166 \pm 60$	$\Omega_{\text{m}}$	0.3021	$0.305 \pm 0.019$	$r_{\text{drag}}$	147.78	$147.77 \pm 0.63$
$A_{143}^{\text{PS}}$	63.6	$51 \pm 10$	$\sigma_8$	0.8291	$0.823 \pm 0.018$	$k_{\text{D}}$	0.13995	$0.13991 \pm 0.00063$
$A_{217}^{\text{PS}}$	116.6	$105^{+20}_{-10}$	$z_{\text{re}}$	11.58	$10.8^{+3.0}_{-2.4}$	$100\theta_{\text{D}}$	0.161196	$0.16128 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	68.25	$68.0 \pm 1.5$	$z_{\text{eq}}$	3348	$3355 \pm 69$
$A_{217}^{\text{CIB}}$	25.3	$29^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0490$	$100\theta_{\text{eq}}$	0.8234	$0.822 \pm 0.014$
$A_{143}^{\text{tSZ}}$	5.20	—	$10^9 A_s$	2.221	$2.19^{+0.12}_{-0.14}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07217	$0.0720 \pm 0.0011$
$r_{143 \times 217}^{\text{PS}}$	0.918	$> 0.846$	$\Omega_{\text{m}} h^2$	0.14074	$0.1410 \pm 0.0029$			
$r_{143 \times 217}^{\text{CIB}}$	0.506	$0.42 \pm 0.23$	$\Omega_{\text{m}} h^3$	0.09606	$0.09594 \pm 0.00058$			

Best-fit  $\chi_{\text{eff}}^2 = 7801.51$ ; R-1 = 0.01065

$\chi_{\text{eff}}^2$ : CMB - lensing: 9.64 lowl: -7.69 CamSpec: 7799.09

### 17.15 base\_r\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022171	$0.02215 \pm 0.00027$	$\gamma^{\text{CIB}}$	0.540	$0.53 \pm 0.13$	$Y_P$	0.247755	$0.24774 \pm 0.00012$
$\Omega_c h^2$	0.11889	$0.1184 \pm 0.0018$	$c_{100}$	1.000592	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8359	$1.829 \pm 0.010$
$100\theta_{\text{MC}}$	1.04145	$1.04150 \pm 0.00057$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.7966	$13.795 \pm 0.041$
$\tau$	0.0955	$0.0995 \pm 0.034$	$\xi^{\text{tSZ-CIB}}$	0.59	—	$z_*$	1090.175	$1090.16 \pm 0.44$
$n_s$	0.9663	$0.9651 \pm 0.0066$	$A^{\text{kSZ}}$	0.59	$< 5.95$	$r_*$	144.859	$145.01 \pm 0.43$
$\ln(10^{10} A_s)$	3.101	$3.105^{+0.073}_{-0.066}$	$\beta_1^1$	0.70	$0.48 \pm 0.56$	$100\theta_*$	1.04159	$1.04165 \pm 0.00057$
$r_{0.05}$	0.0000	$< 0.0501$	$\Omega_\Lambda$	0.6914	$0.694^{+0.012}_{-0.011}$	$z_{\text{drag}}$	1059.47	$1059.38 \pm 0.58$
$A_{100}^{\text{PS}}$	157	$165 \pm 60$	$\Omega_m$	0.3086	$0.306 \pm 0.011$	$r_{\text{drag}}$	147.598	$147.76 \pm 0.45$
$A_{143}^{\text{PS}}$	65.4	$52 \pm 10$	$\sigma_8$	0.8319	$0.832 \pm 0.027$	$k_D$	0.14008	$0.13989 \pm 0.00056$
$A_{217}^{\text{PS}}$	124.7	$107^{+20}_{-10}$	$z_{\text{re}}$	11.55	$11.7^{+3.4}_{-2.5}$	$100\theta_D$	0.161262	$0.16132 \pm 0.00034$
$A_{143}^{\text{CIB}}$	0.0	$< 10.3$	$H_0$	67.76	$67.94 \pm 0.84$	$z_{\text{eq}}$	3370.8	$3358 \pm 41$
$A_{217}^{\text{CIB}}$	23.0	$28^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0456$	$100\theta_{\text{eq}}$	0.8188	$0.8211 \pm 0.0079$
$A_{143}^{\text{tSZ}}$	5.27	—	$10^9 A_s$	2.222	$2.24 \pm 0.15$	$r_{\text{drag}}/D_V(0.57)$	0.07179	$0.07196 \pm 0.00063$
$r_{143 \times 217}^{\text{PS}}$	0.965	$> 0.850$	$\Omega_m h^2$	0.14171	$0.1412 \pm 0.0017$			
$r_{143 \times 217}^{\text{CIB}}$	0.437	$0.41 \pm 0.23$	$\Omega_m h^3$	0.09602	$0.09592 \pm 0.00059$			

Best-fit  $\chi_{\text{eff}}^2 = 7792.90$ ; R-1 = 0.00862

$\chi_{\text{eff}}^2$ : BAO - DR7: 1.17 6DF: 0.01 DR9: 0.27 CMB - lowl: -7.40 CamSpec: 7798.21

## 17.16 base\_r\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022279	$0.02239 \pm 0.00031$	$\gamma^{\text{CIB}}$	0.511	$0.53 \pm 0.13$	$Y_{\text{P}}$	0.247801	$0.24785 \pm 0.00013$
$\Omega_c h^2$	0.11735	$0.1158 \pm 0.0027$	$c_{100}$	1.000595	$1.00059 \pm 0.00041$	$10^9 A_s e^{-2\tau}$	1.8254	$1.817 \pm 0.013$
$100\theta_{\text{MC}}$	1.04172	$1.04191 \pm 0.00064$	$c_{217}$	0.99627	$0.9964 \pm 0.0014$	Age/Gyr	13.771	$13.746 \pm 0.053$
$\tau$	0.0976	$0.122^{+0.041}_{-0.035}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.90	$1089.63 \pm 0.57$
$n_s$	0.9672	$0.9727^{+0.0086}_{-0.0097}$	$A^{\text{kSZ}}$	0.00	$< 5.61$	$r_*$	145.18	$145.51 \pm 0.60$
$\ln(10^{10} A_s)$	3.100	$3.143^{+0.079}_{-0.066}$	$\beta_1^1$	0.55	$0.41 \pm 0.56$	$100\theta_*$	1.04185	$1.04204 \pm 0.00062$
$r_{0.05}$	0.0001	$< 0.0515$	$\Omega_{\Lambda}$	0.7010	$0.710^{+0.017}_{-0.015}$	$z_{\text{drag}}$	1059.63	$1059.75 \pm 0.63$
$A_{100}^{\text{PS}}$	130	$158 \pm 60$	$\Omega_{\text{m}}$	0.2990	$0.290 \pm 0.016$	$r_{\text{drag}}$	147.89	$148.19 \pm 0.59$
$A_{143}^{\text{PS}}$	47.9	$50 \pm 10$	$\sigma_8$	0.8258	$0.840^{+0.030}_{-0.026}$	$k_{\text{D}}$	0.13985	$0.13962 \pm 0.00062$
$A_{217}^{\text{PS}}$	113.8	$107^{+20}_{-10}$	$z_{\text{re}}$	11.64	$13.3^{+3.4}_{-2.3}$	$100\theta_{\text{D}}$	0.161203	$0.16114 \pm 0.00035$
$A_{143}^{\text{CIB}}$	4.59	$< 9.66$	$H_0$	68.49	$69.2 \pm 1.3$	$z_{\text{eq}}$	3336	$3302 \pm 61$
$A_{217}^{\text{CIB}}$	28.5	$28^{+6}_{-9}$	$r_{0.002}$	0.0001	$< 0.0483$	$100\theta_{\text{eq}}$	0.8256	$0.833 \pm 0.012$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.219	$2.32 \pm 0.16$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07235	$0.07293 \pm 0.00099$
$r_{143 \times 217}^{\text{PS}}$	0.891	$> 0.854$	$\Omega_{\text{m}} h^2$	0.14027	$0.1388 \pm 0.0025$			
$r_{143 \times 217}^{\text{CIB}}$	0.535	$0.39^{+0.18}_{-0.32}$	$\Omega_{\text{m}} h^3$	0.09608	$0.09608 \pm 0.00059$			

Best-fit  $\chi_{\text{eff}}^2 = 7797.24$ ; R-1 = 0.01668

$\chi_{\text{eff}}^2$ : CMB - lowl: -7.56 CamSpec: 7799.02 Hubble - HST: 4.89



### 17.17 base\_r\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022198	$0.02227 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.544	$0.53 \pm 0.13$	$Y_P$	0.247766	$0.24780 \pm 0.00014$
$\Omega_c h^2$	0.11831	$0.1170 \pm 0.0028$	$c_{100}$	1.000595	$1.00059 \pm 0.00041$	$10^9 A_s e^{-2\tau}$	1.8323	$1.822 \pm 0.014$
$100\theta_{\text{MC}}$	1.04147	$1.04170 \pm 0.00065$	$c_{217}$	0.99639	$0.9964 \pm 0.0014$	Age/Gyr	13.790	$13.770 \pm 0.055$
$\tau$	0.0967	$0.111^{+0.042}_{-0.037}$	$\xi^{\text{tSZ-CIB}}$	0.15	—	$z_*$	1090.09	$1089.89 \pm 0.60$
$n_s$	0.9668	$0.9692 \pm 0.0091$	$A^{\text{kSZ}}$	0.91	$< 5.79$	$r_*$	144.99	$145.29 \pm 0.62$
$\ln(10^{10} A_s)$	3.102	$3.125^{+0.080}_{-0.070}$	$\beta_1^1$	0.65	$0.44 \pm 0.56$	$100\theta_*$	1.04162	$1.04184 \pm 0.00064$
$r_{0.05}$	0.0000	$< 0.0510$	$\Omega_\Lambda$	0.6947	$0.702^{+0.018}_{-0.016}$	$z_{\text{drag}}$	1059.47	$1059.55 \pm 0.64$
$A_{100}^{\text{PS}}$	149	$161 \pm 60$	$\Omega_m$	0.3053	$0.298^{+0.016}_{-0.018}$	$r_{\text{drag}}$	147.72	$148.01 \pm 0.60$
$A_{143}^{\text{PS}}$	63.8	$51 \pm 10$	$\sigma_8$	0.8301	$0.836 \pm 0.027$	$k_D$	0.13997	$0.13972 \pm 0.00062$
$A_{217}^{\text{PS}}$	121.2	$107^{+20}_{-10}$	$z_{\text{re}}$	11.62	$12.5^{+3.6}_{-2.5}$	$100\theta_D$	0.161247	$0.16124 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	$< 9.95$	$H_0$	68.00	$68.6 \pm 1.3$	$z_{\text{eq}}$	3357	$3327 \pm 63$
$A_{217}^{\text{CIB}}$	24.4	$28^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0472$	$100\theta_{\text{eq}}$	0.8213	$0.828 \pm 0.013$
$A_{143}^{\text{tSZ}}$	6.20	—	$10^9 A_s$	2.223	$2.28 \pm 0.16$	$r_{\text{drag}}/D_V(0.57)$	0.07198	$0.0725 \pm 0.0010$
$r_{143 \times 217}^{\text{PS}}$	0.907	$> 0.852$	$\Omega_m h^2$	0.14115	$0.1399 \pm 0.0026$			
$r_{143 \times 217}^{\text{CIB}}$	0.590	$0.40^{+0.21}_{-0.29}$	$\Omega_m h^3$	0.09599	$0.09597 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 8220.48$ ; R-1 = 0.01013

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.49 CamSpec: 7798.39 SN - SNLS: 428.98

### 17.18 base\_r\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022145	$0.02215 \pm 0.00032$	$\gamma^{\text{CIB}}$	0.534	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247743	$0.24774 \pm 0.00014$
$\Omega_c h^2$	0.11924	$0.1185 \pm 0.0029$	$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8364	$1.829 \pm 0.014$
$100\theta_{\text{MC}}$	1.04139	$1.04149 \pm 0.00066$	$c_{217}$	0.99637	$0.9964 \pm 0.0014$	Age/Gyr	13.802	$13.795 \pm 0.055$
$\tau$	0.0947	$0.0995 \pm 0.038$	$\xi^{\text{tSZ-CIB}}$	0.13	—	$z_*$	1090.24	$1090.18 \pm 0.61$
$n_s$	0.9649	$0.9650 \pm 0.0090$	$A^{\text{kSZ}}$	1.25	$< 5.94$	$r_*$	144.79	$144.99 \pm 0.63$
$\ln(10^{10} A_s)$	3.100	$3.105 \pm 0.071$	$\beta_1^1$	0.69	$0.48 \pm 0.57$	$100\theta_*$	1.04154	$1.04164 \pm 0.00065$
$r_{0.05}$	0.0000	$< 0.0496$	$\Omega_\Lambda$	0.6892	$0.693 \pm 0.018$	$z_{\text{drag}}$	1059.44	$1059.38 \pm 0.63$
$A_{100}^{\text{PS}}$	144	$165 \pm 60$	$\Omega_m$	0.3108	$0.307 \pm 0.018$	$r_{\text{drag}}$	147.54	$147.74 \pm 0.61$
$A_{143}^{\text{PS}}$	61.9	$52 \pm 10$	$\sigma_8$	0.8322	$0.832 \pm 0.027$	$k_D$	0.14012	$0.13990 \pm 0.00063$
$A_{217}^{\text{PS}}$	122.0	$107^{+20}_{-10}$	$z_{\text{re}}$	11.49	$11.6^{+3.8}_{-2.7}$	$100\theta_D$	0.161280	$0.16133 \pm 0.00036$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$H_0$	67.60	$67.9 \pm 1.4$	$z_{\text{eq}}$	3378	$3360 \pm 65$
$A_{217}^{\text{CIB}}$	23.8	$28^{+6}_{-9}$	$r_{0.002}$	0.0000	$< 0.0452$	$100\theta_{\text{eq}}$	0.8173	$0.821 \pm 0.013$
$A_{143}^{\text{tSZ}}$	6.61	—	$10^9 A_s$	2.219	$2.24 \pm 0.16$	$r_{\text{drag}}/D_V(0.57)$	0.07167	$0.0719 \pm 0.0010$
$r_{143 \times 217}^{\text{PS}}$	0.904	$> 0.851$	$\Omega_m h^2$	0.14203	$0.1413 \pm 0.0027$			
$r_{143 \times 217}^{\text{CIB}}$	0.474	$0.41^{+0.23}_{-0.27}$	$\Omega_m h^3$	0.09601	$0.09592 \pm 0.00059$			

Best-fit  $\chi^2_{\text{eff}} = 7921.63$ ; R-1 = 0.00651

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.21 CamSpec: 7797.72 SN - Union2.1: 130.43

### 17.19 base\_r\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02288	$0.02328^{+0.00059}_{-0.00079}$	$\sigma_8$	0.8090	$0.791 \pm 0.026$	$z_*$	1088.74	$1088.0^{+1.3}_{-1.0}$
$\Omega_c h^2$	0.1125	$0.1087 \pm 0.0056$	$z_{\text{re}}$	10.84	$10.6 \pm 1.1$	$r_*$	146.02	$146.8 \pm 1.3$
$100\theta_{\text{MC}}$	1.04084	$1.0414 \pm 0.0025$	$H_0$	70.50	$72.6^{+2.7}_{-3.4}$	$100\theta_*$	1.04093	$1.0415 \pm 0.0024$
$\tau$	0.0917	$0.092^{+0.013}_{-0.016}$	$r_{0.002}$	0.063	$< 0.210$	$z_{\text{drag}}$	1060.62	$1061.2^{+1.3}_{-1.5}$
$n_s$	0.9833	$0.996^{+0.017}_{-0.024}$	$10^9 A_s$	2.218	$2.194^{+0.064}_{-0.073}$	$r_{\text{drag}}$	148.55	$149.2 \pm 1.2$
$\ln(10^{10} A_s)$	3.0992	$3.088 \pm 0.031$	$\Omega_m h^2$	0.1360	$0.1326 \pm 0.0052$	$k_D$	0.13960	$0.1392 \pm 0.0013$
$r_{0.05}$	0.064	$< 0.193$	$\Omega_m h^3$	0.09586	$0.0961 \pm 0.0019$	$100\theta_D$	0.16043	$0.16019 \pm 0.00055$
$A_{\text{tSZ}}$	0.09	—	$Y_P$	0.248053	$0.24821^{+0.00025}_{-0.00031}$	$z_{\text{eq}}$	3234	$3153 \pm 120$
$\Omega_\Lambda$	0.7264	$0.746 \pm 0.030$	$10^9 A_s e^{-2\tau}$	1.8464	$1.826 \pm 0.031$	$100\theta_{\text{eq}}$	0.8462	$0.865^{+0.025}_{-0.030}$
$\Omega_m$	0.2736	$0.254 \pm 0.030$	Age/Gyr	13.713	$13.63^{+0.17}_{-0.13}$	$r_{\text{drag}}/D_V(0.57)$	0.07381	$0.0754^{+0.0021}_{-0.0027}$

Best-fit  $\chi^2_{\text{eff}} = 7557.73$ ; R-1 = 0.01009

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.73

## 17.20 base\_r\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022529	$0.02268 \pm 0.00044$	$\sigma_8$	0.8203	$0.816 \pm 0.018$	$z_*$	1089.49	$1089.26^{+0.52}_{-0.58}$
$\Omega_c h^2$	0.11627	$0.1156 \pm 0.0025$	$z_{\text{re}}$	10.84	$10.4 \pm 1.1$	$r_*$	145.27	$145.34 \pm 0.77$
$100\theta_{\text{MC}}$	1.03985	$1.0397 \pm 0.0020$	$H_0$	68.46	$68.8 \pm 1.0$	$100\theta_*$	1.03996	$1.0398 \pm 0.0020$
$\tau$	0.0894	$0.086 \pm 0.013$	$r_{0.002}$	0.0000	$< 0.0903$	$z_{\text{drag}}$	1060.12	$1060.4 \pm 1.0$
$n_s$	0.9689	$0.976 \pm 0.011$	$10^9 A_s$	2.222	$2.206^{+0.061}_{-0.073}$	$r_{\text{drag}}$	147.90	$147.92 \pm 0.87$
$\ln(10^{10} A_s)$	3.1010	$3.093 \pm 0.029$	$\Omega_m h^2$	0.13944	$0.1389 \pm 0.0026$	$k_D$	0.14003	$0.1401 \pm 0.0011$
$r_{0.05}$	0.0000	$< 0.0941$	$\Omega_m h^3$	0.09546	$0.0955 \pm 0.0017$	$100\theta_D$	0.16061	$0.16041^{+0.00045}_{-0.00055}$
$A_{\text{tSZ}}$	1.22	—	$Y_P$	0.247907	$0.24797 \pm 0.00018$	$z_{\text{eq}}$	3317	$3304 \pm 61$
$\Omega_\Lambda$	0.7025	$0.706 \pm 0.012$	$10^9 A_s e^{-2\tau}$	1.8581	$1.858 \pm 0.023$	$100\theta_{\text{eq}}$	0.8285	$0.831 \pm 0.011$
$\Omega_m$	0.2975	$0.294 \pm 0.012$	Age/Gyr	13.797	$13.783 \pm 0.088$	$r_{\text{drag}}/D_V(0.57)$	0.07227	$0.07248 \pm 0.00072$

Best-fit  $\chi^2_{\text{eff}} = 7559.66$ ; R-1 = 0.02692

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.07 DR7: 0.35 DR9: 0.85 CMB - WMAP: 7558.39

## 17.21 base\_r\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02337	$0.02338^{+0.00052}_{-0.00058}$	$\sigma_8$	0.7948	$0.787 \pm 0.022$	$z_*$	1087.81	$1087.73 \pm 0.77$
$\Omega_c h^2$	0.10822	$0.1074 \pm 0.0039$	$z_{\text{re}}$	10.97	$10.6 \pm 1.1$	$r_*$	146.78	$147.0 \pm 1.0$
$100\theta_{\text{MC}}$	1.04199	$1.0418 \pm 0.0022$	$H_0$	72.95	$73.3 \pm 2.0$	$100\theta_*$	1.04204	$1.0418 \pm 0.0021$
$\tau$	0.0964	$0.093^{+0.013}_{-0.015}$	$r_{0.002}$	0.147	$0.181^{+0.062}_{-0.16}$	$z_{\text{drag}}$	1061.42	$1061.4 \pm 1.2$
$n_s$	0.9985	$0.999^{+0.015}_{-0.017}$	$10^9 A_s$	2.216	$2.193^{+0.065}_{-0.074}$	$r_{\text{drag}}$	149.17	$149.4 \pm 1.1$
$\ln(10^{10} A_s)$	3.0982	$3.087 \pm 0.031$	$\Omega_m h^2$	0.13223	$0.1314 \pm 0.0037$	$k_D$	0.13927	$0.1390 \pm 0.0013$
$r_{0.05}$	0.139	$0.162^{+0.076}_{-0.12}$	$\Omega_m h^3$	0.09647	$0.0962 \pm 0.0018$	$100\theta_D$	0.16014	$0.16015 \pm 0.00052$
$A_{\text{tSZ}}$	0.62	—	$Y_P$	0.248255	$0.24826 \pm 0.00022$	$z_{\text{eq}}$	3144	$3125 \pm 89$
$\Omega_\Lambda$	0.7515	$0.754^{+0.021}_{-0.018}$	$10^9 A_s e^{-2\tau}$	1.8273	$1.820 \pm 0.026$	$100\theta_{\text{eq}}$	0.8667	$0.871 \pm 0.019$
$\Omega_m$	0.2485	$0.246^{+0.018}_{-0.021}$	Age/Gyr	13.605	$13.60 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07566	$0.0760 \pm 0.0015$

Best-fit  $\chi^2_{\text{eff}} = 7558.41$ ; R-1 = 0.01538

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.25 Hubble - HST: 0.16

## 17.22 base\_r\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02324	$0.02342^{+0.00058}_{-0.00072}$	$\sigma_8$	0.7950	$0.785 \pm 0.024$	$z_*$	1088.00	$1087.7^{+1.1}_{-0.92}$
$\Omega_c h^2$	0.10881	$0.1070 \pm 0.0046$	$z_{\text{re}}$	10.75	$10.6 \pm 1.1$	$r_*$	146.72	$147.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04169	$1.0418 \pm 0.0024$	$H_0$	72.51	$73.5^{+2.3}_{-2.9}$	$100\theta_*$	1.04175	$1.0419 \pm 0.0023$
$\tau$	0.0929	$0.093^{+0.013}_{-0.016}$	$r_{0.002}$	0.137	$< 0.238$	$z_{\text{drag}}$	1061.19	$1061.4 \pm 1.3$
$n_s$	0.9961	$1.001^{+0.017}_{-0.022}$	$10^9 A_s$	2.205	$2.191^{+0.065}_{-0.074}$	$r_{\text{drag}}$	149.15	$149.5 \pm 1.1$
$\ln(10^{10} A_s)$	3.0935	$3.087 \pm 0.031$	$\Omega_m h^2$	0.13269	$0.1310 \pm 0.0043$	$k_D$	0.13921	$0.1390 \pm 0.0013$
$r_{0.05}$	0.132	$0.170^{+0.071}_{-0.14}$	$\Omega_m h^3$	0.09621	$0.0962 \pm 0.0019$	$100\theta_D$	0.16024	$0.16013 \pm 0.00055$
$A_{\text{tSZ}}$	0.00	—	$Y_P$	0.248203	$0.24827^{+0.00025}_{-0.00029}$	$z_{\text{eq}}$	3155	$3115 \pm 100$
$\Omega_\Lambda$	0.7476	$0.756 \pm 0.024$	$10^9 A_s e^{-2\tau}$	1.8312	$1.818 \pm 0.028$	$100\theta_{\text{eq}}$	0.8638	$0.873^{+0.022}_{-0.025}$
$\Omega_m$	0.2524	$0.244 \pm 0.024$	Age/Gyr	13.631	$13.60^{+0.15}_{-0.13}$	$r_{\text{drag}}/D_V(0.57)$	0.07535	$0.0761^{+0.0018}_{-0.0022}$

Best-fit  $\chi^2_{\text{eff}} = 7983.76$ ; R-1 = 0.01376

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.99 SN - SNLS: 425.77

### 17.23 base\_r\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02264	$0.02315^{+0.00055}_{-0.00067}$	$\sigma_8$	0.8126	$0.795 \pm 0.024$	$z_*$	1089.15	$1088.2^{+1.0}_{-0.89}$
$\Omega_c h^2$	0.11388	$0.1098 \pm 0.0047$	$z_{\text{re}}$	10.99	$10.6 \pm 1.1$	$r_*$	145.82	$146.5 \pm 1.1$
$100\theta_{\text{MC}}$	1.04018	$1.0411 \pm 0.0024$	$H_0$	69.55	$71.9^{+2.3}_{-2.8}$	$100\theta_*$	1.04030	$1.0412 \pm 0.0023$
$\tau$	0.0923	$0.091^{+0.013}_{-0.015}$	$r_{0.002}$	0.006	$< 0.181$	$z_{\text{drag}}$	1060.20	$1061.1 \pm 1.2$
$n_s$	0.9739	$0.992^{+0.015}_{-0.020}$	$10^9 A_s$	2.221	$2.196^{+0.063}_{-0.074}$	$r_{\text{drag}}$	148.42	$149.0 \pm 1.1$
$\ln(10^{10} A_s)$	3.1005	$3.089 \pm 0.031$	$\Omega_m h^2$	0.13717	$0.1336 \pm 0.0044$	$k_D$	0.13957	$0.1393 \pm 0.0013$
$r_{0.05}$	0.007	$< 0.171$	$\Omega_m h^3$	0.09540	$0.0960 \pm 0.0018$	$100\theta_D$	0.16059	$0.16024 \pm 0.00053$
$A_{\text{tSZ}}$	0.80	—	$Y_P$	0.247955	$0.24817^{+0.00023}_{-0.00027}$	$z_{\text{eq}}$	3262	$3177 \pm 110$
$\Omega_\Lambda$	0.7164	$0.740^{+0.028}_{-0.025}$	$10^9 A_s e^{-2\tau}$	1.8467	$1.831 \pm 0.029$	$100\theta_{\text{eq}}$	0.8394	$0.859^{+0.022}_{-0.025}$
$\Omega_m$	0.2836	$0.260^{+0.025}_{-0.028}$	Age/Gyr	13.763	$13.66^{+0.14}_{-0.12}$	$r_{\text{drag}}/D_V(0.57)$	0.07314	$0.0749^{+0.0018}_{-0.0021}$

Best-fit  $\chi^2_{\text{eff}} = 7687.92$ ; R-1 = 0.00895

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.01 SN - Union2.1: 129.91

## 18 w

### 18.1 base\_w\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022102	$0.02206 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.436	$0.42 \pm 0.23$	$\Omega_m h^3$	0.1049	$0.119^{+0.021}_{-0.012}$
$\Omega_c h^2$	0.11995	$0.1199 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.533	$0.54^{+0.13}_{-0.12}$	$Y_P$	0.247725	$0.24771 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04129	$1.04131 \pm 0.00063$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8400	$1.836 \pm 0.013$
$\tau$	0.0930	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99646	$0.9964 \pm 0.0014$	Age/Gyr	13.700	$13.609^{+0.081}_{-0.18}$
$w$	-1.205	$-1.49^{+0.25}_{-0.43}$	$\xi^{\text{tSZ-CIB}}$	0.12	—	$z_*$	1090.36	$1090.41 \pm 0.53$
$n_s$	0.9632	$0.9602 \pm 0.0071$	$A^{\text{kSZ}}$	0.85	$< 6.15$	$r_*$	144.64	$144.68 \pm 0.58$
$\ln(10^{10} A_s)$	3.0983	$3.089^{+0.024}_{-0.027}$	$\beta_1^1$	0.70	$0.53 \pm 0.56$	$100\theta_*$	1.04144	$1.04147 \pm 0.00062$
$A_{100}^{\text{PS}}$	151	$168 \pm 60$	$\Omega_\Lambda$	0.736	$0.782^{+0.079}_{-0.023}$	$z_{\text{drag}}$	1059.40	$1059.30 \pm 0.58$
$A_{143}^{\text{PS}}$	64.5	$54 \pm 10$	$\Omega_m$	0.264	$0.218^{+0.023}_{-0.079}$	$r_{\text{drag}}$	147.39	$147.45 \pm 0.58$
$A_{217}^{\text{PS}}$	121.9	$107^{+20}_{-10}$	$\sigma_8$	0.893	$0.966^{+0.12}_{-0.073}$	$k_D$	0.14024	$0.14015 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$z_{\text{re}}$	11.36	$11.0 \pm 1.1$	$100\theta_D$	0.161301	$0.16137 \pm 0.00034$
$A_{217}^{\text{CIB}}$	24.2	$29^{+6}_{-9}$	$H_0$	73.5	$> 77.9$	$z_{\text{eq}}$	3394	$3393 \pm 58$
$A_{143}^{\text{tSZ}}$	6.10	—	$10^9 A_s$	2.216	$2.196^{+0.051}_{-0.060}$	$100\theta_{\text{eq}}$	0.8143	$0.815 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.852$	$\Omega_m h^2$	0.14270	$0.1426 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07287	$0.0741^{+0.0024}_{-0.0015}$

Best-fit  $\chi^2_{\text{eff}} = 9804.62$ ; R-1 = 0.00582

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.56 lowl: -7.41 CamSpec: 7796.77



## 18.2 base\_w\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022260	$0.02222 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.504	$0.44 \pm 0.22$	$\Omega_m h^3$	0.1262	$0.117^{+0.020}_{-0.012}$
$\Omega_c h^2$	0.11798	$0.1180 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.517	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247793	$0.24777 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04154	$1.04152 \pm 0.00061$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8297	$1.828 \pm 0.011$
$\tau$	0.0805	$0.088^{+0.012}_{-0.013}$	$c_{217}$	0.99628	$0.9964 \pm 0.0014$	Age/Gyr	13.494	$13.581^{+0.083}_{-0.18}$
$w$	-1.629	$-1.45^{+0.23}_{-0.39}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1089.985	$1090.04 \pm 0.48$
$n_s$	0.9651	$0.9644 \pm 0.0067$	$A^{\text{kSZ}}$	0.0	—	$r_*$	145.029	$145.07 \pm 0.49$
$\ln(10^{10} A_s)$	3.0678	$3.081^{+0.022}_{-0.024}$	$\beta_1^1$	0.57	$0.45 \pm 0.55$	$100\theta_*$	1.04167	$1.04166 \pm 0.00060$
$A_{100}^{\text{PS}}$	137	$167 \pm 60$	$\Omega_\Lambda$	0.8243	$> 0.770$	$z_{\text{drag}}$	1059.63	$1059.51 \pm 0.58$
$A_{143}^{\text{PS}}$	47.7	$51 \pm 10$	$\Omega_m$	0.1757	$< 0.230$	$r_{\text{drag}}$	147.740	$147.80 \pm 0.49$
$A_{217}^{\text{PS}}$	112.8	$104^{+20}_{-10}$	$\sigma_8$	0.994	$0.948^{+0.11}_{-0.065}$	$k_D$	0.14000	$0.13990 \pm 0.00056$
$A_{143}^{\text{CIB}}$	5.02	$< 10.9$	$z_{\text{re}}$	10.14	$10.8 \pm 1.0$	$100\theta_D$	0.161179	$0.16124 \pm 0.00033$
$A_{217}^{\text{CIB}}$	28.7	$29^{+6}_{-9}$	$H_0$	89.6	$> 78.2$	$z_{\text{eq}}$	3351.1	$3349 \pm 49$
$A^{\text{tSZ}}_{143}$	9.39	—	$10^9 A_s$	2.149	$2.179^{+0.046}_{-0.054}$	$100\theta_{\text{eq}}$	0.8227	$0.8230 \pm 0.0095$
$r_{143 \times 217}^{\text{PS}}$	0.889	$> 0.845$	$\Omega_m h^2$	0.14089	$0.1408 \pm 0.0020$	$r_{\text{drag}}/D_V(0.57)$	0.07591	$0.0748^{+0.0025}_{-0.0014}$

Best-fit  $\chi^2_{\text{eff}} = 9814.06$ ; R-1 = 0.01931

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.94 lensing: 8.89 lowl: -8.57 CamSpec: 7797.95

### 18.3 base\_w\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022119	$0.02211 \pm 0.00027$	$\beta_1^1$	0.41	$0.38 \pm 0.55$	$\sigma_8$	0.889	$0.973^{+0.11}_{-0.066}$
$\Omega_c h^2$	0.11979	$0.1197 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.29	$10.54 \pm 0.59$	$z_{\text{re}}$	11.54	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04136	$1.04137 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.28	$76.8 \pm 4.5$	$H_0$	73.4	$> 79.5$
$\tau$	0.0952	$0.090^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.37	$7.67^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.196^{+0.051}_{-0.061}$
$w$	-1.197	$-1.51^{+0.23}_{-0.40}$	$A_{150}^{\text{PS, SPT}}$	9.81	$10.08 \pm 0.51$	$\Omega_m h^2$	0.14255	$0.1425 \pm 0.0024$
$n_s$	0.9592	$0.9583 \pm 0.0069$	$A_{220}^{\text{PS, SPT}}$	73.05	$74.3 \pm 4.5$	$\Omega_m h^3$	0.1046	$0.120^{+0.020}_{-0.011}$
$\ln(10^{10} A_s)$	3.0995	$3.089^{+0.024}_{-0.027}$	$r_{95 \times 150}^{\text{PS}}$	0.792	$0.832 \pm 0.089$	$Y_p$	0.247732	$0.24773 \pm 0.00012$
$A_{100}^{\text{PS}}$	201	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.544	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8339	$1.833 \pm 0.012$
$A_{143}^{\text{PS}}$	72.0	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9109	$0.937 \pm 0.024$	Age/Gyr	13.699	$13.587^{+0.073}_{-0.16}$
$A_{217}^{\text{PS}}$	60.5	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.424	$0.43 \pm 0.19$	$z_*$	1090.32	$1090.33 \pm 0.51$
$A_{143}^{\text{CIB}}$	3.18	$3.26 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.20$	$r_*$	144.67	$144.69 \pm 0.58$
$A_{217}^{\text{CIB}}$	52.1	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9922 \pm 0.0073$	$100\theta_*$	1.04152	$1.04152 \pm 0.00061$
$A_{143}^{\text{tSZ}}$	4.61	$2.53^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0029	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.40	$1059.39 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.822^{+0.069}_{-0.079}$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9886 \pm 0.0072$	$r_{\text{drag}}$	147.42	$147.45 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9613	$0.964 \pm 0.010$	$k_D$	0.14023	$0.14019 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.657	$0.640 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9841	$0.984 \pm 0.020$	$100\theta_D$	0.161295	$0.16131 \pm 0.00032$
$c_{100}$	1.000590	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9849	$0.9878 \pm 0.0096$	$z_{\text{eq}}$	3391	$3389 \pm 58$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0163	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8150	$0.815 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.407$	$\Omega_\Lambda$	0.7354	$0.789^{+0.072}_{-0.021}$	$r_{\text{drag}}/D_V(0.57)$	0.07290	$0.0744^{+0.0022}_{-0.0014}$
$A^{\text{kSZ}}$	1.83	$5.28^{+2.8}_{-2.0}$	$\Omega_m$	0.2646	$0.211^{+0.021}_{-0.072}$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.11$ ; R-1 =0.00657

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.73 lowl: -6.58 CamSpec: 7807.43 highL: 692.41

## 18.4 base\_w\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022205	$0.02224 \pm 0.00026$	$\beta_1^1$	0.38	$0.33 \pm 0.54$	$\sigma_8$	0.837	$0.961^{+0.10}_{-0.057}$
$\Omega_c h^2$	0.11831	$0.1180 \pm 0.0021$	$A_{148}^{\text{PS, ACT}}$	10.43	$10.68 \pm 0.58$	$z_{\text{re}}$	11.59	$10.8 \pm 1.1$
$100\theta_{\text{MC}}$	1.04147	$1.04153 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	76.37	$77.0 \pm 4.5$	$H_0$	69.0	$> 80.6$
$\tau$	0.0963	$0.088^{+0.012}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.53	$7.89^{+1.4}_{-1.7}$	$10^9 A_s$	2.216	$2.180^{+0.046}_{-0.055}$
$w$	-1.031	$-1.49^{+0.20}_{-0.37}$	$A_{150}^{\text{PS, SPT}}$	9.969	$10.24 \pm 0.51$	$\Omega_m h^2$	0.14116	$0.1409 \pm 0.0020$
$n_s$	0.9628	$0.9622 \pm 0.0062$	$A_{220}^{\text{PS, SPT}}$	73.17	$74.7 \pm 4.6$	$\Omega_m h^3$	0.0974	$0.120^{+0.019}_{-0.010}$
$\ln(10^{10} A_s)$	3.0982	$3.082^{+0.022}_{-0.025}$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.830 \pm 0.087$	$Y_p$	0.247769	$0.24778 \pm 0.00011$
$A_{100}^{\text{PS}}$	203	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.547	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8275	$1.826 \pm 0.010$
$A_{143}^{\text{PS}}$	72.0	$72 \pm 8$	$r_{150 \times 220}^{\text{PS}}$	0.9083	$0.933^{+0.023}_{-0.026}$	Age/Gyr	13.770	$13.560^{+0.070}_{-0.16}$
$A_{217}^{\text{PS}}$	59.7	$58 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.080	$1090.02 \pm 0.46$
$A_{143}^{\text{CIB}}$	3.24	$3.25 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.845	$0.84 \pm 0.20$	$r_*$	144.987	$145.04 \pm 0.48$
$A_{217}^{\text{CIB}}$	52.5	$50.0 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9919	$0.9926 \pm 0.0074$	$100\theta_*$	1.04162	$1.04167 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.66	$2.49^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0038	$1.007 \pm 0.013$	$z_{\text{drag}}$	1059.51	$1059.56 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.824 \pm 0.071$	$y_{148}^{\text{ACTe}}$	0.9882	$0.9892 \pm 0.0072$	$r_{\text{drag}}$	147.717	$147.76 \pm 0.49$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9620	$0.965 \pm 0.010$	$k_D$	0.13998	$0.13996 \pm 0.00056$
$\gamma^{\text{CIB}}$	0.660	$0.641 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9859	$0.985^{+0.018}_{-0.021}$	$100\theta_D$	0.161237	$0.16122 \pm 0.00032$
$c_{100}$	1.000591	$1.00060 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9862	$0.9893 \pm 0.0098$	$z_{\text{eq}}$	3357.5	$3352 \pm 48$
$c_{217}$	0.99728	$0.9973 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0173	$1.027^{+0.022}_{-0.026}$	$100\theta_{\text{eq}}$	0.8213	$0.8226 \pm 0.0092$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.394$	$\Omega_\Lambda$	0.7033	$0.796^{+0.067}_{-0.018}$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.0751^{+0.0022}_{-0.0012}$
$A^{\text{kSZ}}$	1.15	$4.72^{+2.7}_{-2.0}$	$\Omega_m$	0.2967	$0.204^{+0.018}_{-0.067}$			

Best-fit  $\chi_{\text{eff}}^2 = 10517.36$ ; R-1 = 0.02339

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.62 lensing: 9.55 lowl: -6.91 CamSpec: 7808.76 highL: 691.23

## 18.5 base\_w\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022148	$0.02209 \pm 0.00026$	$\beta_1^1$	0.37	$0.39 \pm 0.55$	$\sigma_8$	0.8954	$0.897 \pm 0.031$
$\Omega_c h^2$	0.11925	$0.1200 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.29	$10.56 \pm 0.59$	$z_{\text{re}}$	11.60	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04141	$1.04132 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	75.92	$76.7 \pm 4.5$	$H_0$	74.52	$74.7 \pm 2.6$
$\tau$	0.0962	$0.090 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.29	$7.63^{+1.4}_{-1.7}$	$10^9 A_s$	2.220	$2.198^{+0.051}_{-0.059}$
$w$	-1.223	$-1.244 \pm 0.095$	$A_{150}^{\text{PS, SPT}}$	9.80	$10.10 \pm 0.50$	$\Omega_m h^2$	0.14204	$0.1427 \pm 0.0024$
$n_s$	0.9604	$0.9579 \pm 0.0068$	$A_{220}^{\text{PS, SPT}}$	72.84	$74.2 \pm 4.5$	$\Omega_m h^3$	0.10585	$0.1066 \pm 0.0041$
$\ln(10^{10} A_s)$	3.1000	$3.090 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.804	$0.833 \pm 0.090$	$Y_p$	0.247745	$0.24772 \pm 0.00011$
$A_{100}^{\text{PS}}$	199	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.558	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8313	$1.834 \pm 0.012$
$A_{143}^{\text{PS}}$	71.7	$72.5 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9098	$0.938 \pm 0.023$	Age/Gyr	13.6790	$13.685 \pm 0.050$
$A_{217}^{\text{PS}}$	59.9	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.437	$0.43^{+0.18}_{-0.21}$	$z_*$	1090.239	$1090.38 \pm 0.49$
$A_{143}^{\text{CIB}}$	3.33	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.844	$0.84 \pm 0.20$	$r_*$	144.78	$144.64 \pm 0.59$
$A_{217}^{\text{CIB}}$	52.72	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9922 \pm 0.0072$	$100\theta_*$	1.04156	$1.04147 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.87	$2.52^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0021	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.44	$1059.36 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.821	$0.825 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9886 \pm 0.0072$	$r_{\text{drag}}$	147.53	$147.40 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9608	$0.964 \pm 0.010$	$k_D$	0.14013	$0.14022 \pm 0.00063$
$\gamma^{\text{CIB}}$	0.660	$0.640 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9850	$0.984 \pm 0.019$	$100\theta_D$	0.161277	$0.16133 \pm 0.00032$
$c_{100}$	1.000588	$1.00057 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9850	$0.9878 \pm 0.0095$	$z_{\text{eq}}$	3379	$3395 \pm 58$
$c_{217}$	0.99726	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0177	$1.025^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8173	$0.814 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.417$	$\Omega_\Lambda$	0.7442	$0.743^{+0.021}_{-0.016}$	$r_{\text{drag}}/D_V(0.57)$	0.07327	$0.07307 \pm 0.00087$
$A^{\text{kSZ}}$	1.41	$5.35^{+2.7}_{-1.9}$	$\Omega_m$	0.2558	$0.257^{+0.016}_{-0.021}$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.10$ ; R-1 =0.02710

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.79 lowl: -6.87 CamSpec: 7807.60 highL: 692.44 Hubble - HST: 0.01

## 18.6 base\_w\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022082	$0.02211 \pm 0.00027$	$\beta_1^1$	0.45	$0.38 \pm 0.55$	$\sigma_8$	0.8696	$0.866 \pm 0.024$
$\Omega_c h^2$	0.12023	$0.1196 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.56 \pm 0.59$	$z_{\text{re}}$	11.55	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04132	$1.04136 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	75.09	$76.9 \pm 4.5$	$H_0$	70.90	$71.5 \pm 2.2$
$\tau$	0.0949	$0.091^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.22	$7.63^{+1.4}_{-1.7}$	$10^9 A_s$	2.219	$2.199^{+0.051}_{-0.059}$
$w$	-1.124	$-1.135 \pm 0.069$	$A_{150}^{\text{PS, SPT}}$	9.754	$10.09 \pm 0.50$	$\Omega_m h^2$	0.14296	$0.1424 \pm 0.0025$
$n_s$	0.9581	$0.9586 \pm 0.0070$	$A_{220}^{\text{PS, SPT}}$	72.32	$74.3 \pm 4.4$	$\Omega_m h^3$	0.10136	$0.1018 \pm 0.0030$
$\ln(10^{10} A_s)$	3.0998	$3.090 \pm 0.025$	$r_{95 \times 150}^{\text{PS}}$	0.806	$0.833 \pm 0.089$	$Y_p$	0.247716	$0.24773 \pm 0.00011$
$A_{100}^{\text{PS}}$	205	$212 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.566	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8357	$1.833 \pm 0.013$
$A_{143}^{\text{PS}}$	72.6	$72^{+9}_{-8}$	$r_{150 \times 220}^{\text{PS}}$	0.9109	$0.937 \pm 0.024$	Age/Gyr	13.744	$13.733 \pm 0.053$
$A_{217}^{\text{PS}}$	58.4	$59 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.434	$0.44 \pm 0.19$	$z_*$	1090.41	$1090.32^{+0.49}_{-0.54}$
$A_{143}^{\text{CIB}}$	3.31	$3.27 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.827	$0.85 \pm 0.20$	$r_*$	144.58	$144.72 \pm 0.59$
$A_{217}^{\text{CIB}}$	53.72	$49.5 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9920	$0.9925 \pm 0.0071$	$100\theta_*$	1.04147	$1.04151 \pm 0.00061$
$A_{143}^{\text{tSZ}}$	4.79	$2.55^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0032	$1.006 \pm 0.013$	$z_{\text{drag}}$	1059.36	$1059.38 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.835	$0.823 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9873	$0.9887 \pm 0.0072$	$r_{\text{drag}}$	147.34	$147.48 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.928$	$y_{217}^{\text{ACTe}}$	0.9611	$0.964 \pm 0.010$	$k_D$	0.14027	$0.14016 \pm 0.00063$
$\gamma^{\text{CIB}}$	0.673	$0.637 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9825	$0.984 \pm 0.019$	$100\theta_D$	0.161327	$0.16132 \pm 0.00032$
$c_{100}$	1.000608	$1.00057 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9850	$0.9879 \pm 0.0097$	$z_{\text{eq}}$	3401	$3387 \pm 59$
$c_{217}$	0.99730	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0201	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8131	$0.816 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.004	$< 0.425$	$\Omega_\Lambda$	0.7156	$0.721^{+0.021}_{-0.018}$	$r_{\text{drag}}/D_V(0.57)$	0.07225	$0.07253 \pm 0.00093$
$A^{\text{kSZ}}$	1.59	$5.34^{+2.7}_{-2.0}$	$\Omega_m$	0.2844	$0.279^{+0.018}_{-0.021}$			

Best-fit  $\chi_{\text{eff}}^2 = 10935.13$ ; R-1 = 0.04506

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.71 lowl: -6.18 CamSpec: 7807.79 highL: 692.32 SN - SNLS: 426.42

## 18.7 base\_w\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022116	$0.02208 \pm 0.00027$	$\beta_1^1$	0.42	$0.38 \pm 0.55$	$\sigma_8$	0.8452	$0.856 \pm 0.028$
$\Omega_c h^2$	0.11962	$0.1201 \pm 0.0026$	$A_{148}^{\text{PS, ACT}}$	10.35	$10.54 \pm 0.59$	$z_{\text{re}}$	11.54	$11.1 \pm 1.1$
$100\theta_{\text{MC}}$	1.04141	$1.04130 \pm 0.00062$	$A_{218}^{\text{PS, ACT}}$	76.50	$76.8 \pm 4.5$	$H_0$	68.86	$70.1 \pm 2.6$
$\tau$	0.0951	$0.090^{+0.013}_{-0.014}$	$A_{95}^{\text{PS, SPT}}$	7.49	$7.66^{+1.4}_{-1.7}$	$10^9 A_s$	2.217	$2.197^{+0.051}_{-0.058}$
$w$	-1.047	$-1.095 \pm 0.085$	$A_{150}^{\text{PS, SPT}}$	9.883	$10.08 \pm 0.50$	$\Omega_m h^2$	0.14238	$0.1428 \pm 0.0025$
$n_s$	0.9594	$0.9575 \pm 0.0069$	$A_{220}^{\text{PS, SPT}}$	73.36	$74.4 \pm 4.4$	$\Omega_m h^3$	0.09804	$0.1000 \pm 0.0037$
$\ln(10^{10} A_s)$	3.0987	$3.089 \pm 0.024$	$r_{95 \times 150}^{\text{PS}}$	0.784	$0.833 \pm 0.089$	$Y_P$	0.247731	$0.24771 \pm 0.00012$
$A_{100}^{\text{PS}}$	204	$213 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.538	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8330	$1.835 \pm 0.012$
$A_{143}^{\text{PS}}$	72.4	$73^{+9}_{-8}$	$r_{150 \times 220}^{\text{PS}}$	0.9137	$0.937 \pm 0.024$	Age/Gyr	13.778	$13.763 \pm 0.060$
$A_{217}^{\text{PS}}$	60.5	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.427	$0.44 \pm 0.19$	$z_*$	1090.31	$1090.41 \pm 0.51$
$A_{143}^{\text{CIB}}$	3.04	$3.28 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	144.71	$144.62 \pm 0.59$
$A_{217}^{\text{CIB}}$	51.5	$49.6^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9916	$0.9922 \pm 0.0072$	$100\theta_*$	1.04156	$1.04146 \pm 0.00061$
$A_{143}^{\text{tSZ}}$	4.17	$2.55^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.40	$1059.34 \pm 0.56$
$r_{143 \times 217}^{\text{PS}}$	0.812	$0.823 \pm 0.072$	$y_{148}^{\text{ACTe}}$	0.9879	$0.9885 \pm 0.0073$	$r_{\text{drag}}$	147.47	$147.39 \pm 0.58$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9618	$0.964 \pm 0.010$	$k_D$	0.14017	$0.14022 \pm 0.00063$
$\gamma^{\text{CIB}}$	0.652	$0.636 \pm 0.080$	$y_{95}^{\text{SPT}}$	0.9839	$0.983 \pm 0.019$	$100\theta_D$	0.161311	$0.16134 \pm 0.00033$
$c_{100}$	1.000589	$1.00057 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9851	$0.9874 \pm 0.0097$	$z_{\text{eq}}$	3387	$3398 \pm 59$
$c_{217}$	0.99737	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0170	$1.024^{+0.022}_{-0.025}$	$100\theta_{\text{eq}}$	0.8157	$0.814 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.026	$< 0.416$	$\Omega_\Lambda$	0.6997	$0.708^{+0.023}_{-0.021}$	$r_{\text{drag}}/D_V(0.57)$	0.07192	$0.07206 \pm 0.00097$
$A^{\text{kSZ}}$	2.60	$5.32^{+2.7}_{-2.0}$	$\Omega_m$	0.3003	$0.292 \pm 0.023$			

Best-fit  $\chi_{\text{eff}}^2 = 10638.69$ ; R-1 = 0.04908

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.63 lowl: -6.28 CamSpec: 7807.96 highL: 692.36 SN - Union2.1: 129.89

## 18.8 base\_w\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022144	$0.02211 \pm 0.00033$	$r_{143 \times 217}^{\text{CIB}}$	0.620	$0.41^{+0.22}_{-0.27}$	$\Omega_m h^3$	0.1088	$0.120^{+0.020}_{-0.011}$
$\Omega_c h^2$	0.11975	$0.1195 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.545	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247743	$0.24773 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04137	$1.04137 \pm 0.00068$	$c_{100}$	1.000593	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8395	$1.834 \pm 0.015$
$\tau$	0.0924	$0.097 \pm 0.039$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	Age/Gyr	13.654	$13.584^{+0.081}_{-0.17}$
$w$	-1.289	$-1.52^{+0.23}_{-0.40}$	$\xi^{\text{tSZ-CIB}}$	0.19	—	$z_*$	1090.29	$1090.31 \pm 0.65$
$n_s$	0.9636	$0.9619^{+0.0091}_{-0.010}$	$A^{\text{kSZ}}$	0.74	$< 5.92$	$r_*$	144.66	$144.75 \pm 0.67$
$\ln(10^{10} A_s)$	3.097	$3.104 \pm 0.074$	$\beta_1^1$	0.67	$0.51 \pm 0.57$	$100\theta_*$	1.04151	$1.04152 \pm 0.00067$
$A_{100}^{\text{PS}}$	152	$166 \pm 60$	$\Omega_\Lambda$	0.7556	$0.791^{+0.072}_{-0.020}$	$z_{\text{drag}}$	1059.47	$1059.38 \pm 0.64$
$A_{143}^{\text{PS}}$	65.0	$53 \pm 10$	$\Omega_m$	0.2444	$0.209^{+0.020}_{-0.072}$	$r_{\text{drag}}$	147.40	$147.51 \pm 0.64$
$A_{217}^{\text{PS}}$	121.0	$107^{+20}_{-10}$	$\sigma_8$	0.916	$0.982^{+0.12}_{-0.071}$	$k_D$	0.14026	$0.14012 \pm 0.00064$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$z_{\text{re}}$	11.28	$11.4^{+3.9}_{-3.0}$	$100\theta_D$	0.161261	$0.16132 \pm 0.00037$
$A_{217}^{\text{CIB}}$	24.5	$28^{+6}_{-9}$	$H_0$	76.4	$> 80.0$	$z_{\text{eq}}$	3391	$3384 \pm 70$
$A_{143}^{\text{tSZ}}$	5.81	—	$10^9 A_s$	2.213	$2.23^{+0.16}_{-0.19}$	$100\theta_{\text{eq}}$	0.8151	$0.817 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.908	$> 0.852$	$\Omega_m h^2$	0.14254	$0.1423 \pm 0.0029$	$r_{\text{drag}}/D_V(0.57)$	0.07347	$0.0745^{+0.0023}_{-0.0017}$

Best-fit  $\chi^2_{\text{eff}} = 7789.75$ ; R-1 = 0.01369

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.62 CamSpec: 7796.77

## 18.9 base\_w\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022164	$0.02218^{+0.00032}_{-0.00036}$	$r_{143 \times 217}^{\text{CIB}}$	0.547	$0.44 \pm 0.23$	$\Omega_m h^3$	0.1232	$0.120^{+0.019}_{-0.011}$
$\Omega_c h^2$	0.11904	$0.1186^{+0.0033}_{-0.0030}$	$\gamma^{\text{CIB}}$	0.514	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247751	$0.24776 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04140	$1.04143 \pm 0.00068$	$c_{100}$	1.000594	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8340	$1.831 \pm 0.015$
$\tau$	0.0688	$0.079^{+0.031}_{-0.035}$	$c_{217}$	0.99631	$0.9963 \pm 0.0014$	Age/Gyr	13.534	$13.572^{+0.081}_{-0.16}$
$w$	-1.582	$-1.50^{+0.23}_{-0.38}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.20	$1090.15 \pm 0.64$
$n_s$	0.9618	$0.9629^{+0.0087}_{-0.010}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.83	$144.94^{+0.63}_{-0.73}$
$\ln(10^{10} A_s)$	3.047	$3.066^{+0.056}_{-0.062}$	$\beta_1^1$	0.59	$0.50 \pm 0.57$	$100\theta_*$	1.04155	$1.04158 \pm 0.00067$
$A_{100}^{\text{PS}}$	140	$170 \pm 60$	$\Omega_\Lambda$	0.8119	$0.794^{+0.069}_{-0.020}$	$z_{\text{drag}}$	1059.47	$1059.46 \pm 0.63$
$A_{143}^{\text{PS}}$	46.5	$51 \pm 10$	$\Omega_m$	0.1881	$0.206^{+0.020}_{-0.069}$	$r_{\text{drag}}$	147.57	$147.68^{+0.61}_{-0.69}$
$A_{217}^{\text{PS}}$	111.3	$105^{+20}_{-20}$	$\sigma_8$	0.972	$0.957^{+0.10}_{-0.058}$	$k_D$	0.14010	$0.13999 \pm 0.00063$
$A_{143}^{\text{CIB}}$	6.05	$< 10.8$	$z_{\text{re}}$	9.10	$9.83^{+3.2}_{-2.6}$	$100\theta_D$	0.161260	$0.16127 \pm 0.00036$
$A_{217}^{\text{CIB}}$	29.9	$29^{+6}_{-9}$	$H_0$	86.8	$> 80.2$	$z_{\text{eq}}$	3374	$3363^{+75}_{-67}$
$A_{143}^{\text{tSZ}}$	9.70	—	$10^9 A_s$	2.105	$2.15^{+0.11}_{-0.14}$	$100\theta_{\text{eq}}$	0.8182	$0.820^{+0.013}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	0.887	$> 0.846$	$\Omega_m h^2$	0.14184	$0.1414^{+0.0032}_{-0.0028}$	$r_{\text{drag}}/D_V(0.57)$	0.07520	$0.0748^{+0.0023}_{-0.0017}$

Best-fit  $\chi^2_{\text{eff}} = 7799.39$ ; R-1 = 0.02583

$\chi^2_{\text{eff}}$ : CMB - lensing: 8.94 lowl: -8.43 CamSpec: 7798.01



## 18.10 base\_w\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022058	$0.02199^{+0.00028}_{-0.00032}$	$r_{143 \times 217}^{\text{CIB}}$	0.421	$0.42^{+0.22}_{-0.27}$	$\Omega_m h^3$	0.1004	$0.1018^{+0.0049}_{-0.0060}$
$\Omega_c h^2$	0.12041	$0.1209 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.536	$0.54 \pm 0.13$	$Y_P$	0.247706	$0.24767 \pm 0.00013$
$100\theta_{\text{MC}}$	1.04121	$1.04118 \pm 0.00063$	$c_{100}$	1.000576	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8395	$1.840 \pm 0.014$
$\tau$	0.0933	$0.086^{+0.035}_{-0.042}$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	Age/Gyr	13.761	$13.760 \pm 0.051$
$w$	-1.105	$-1.14^{+0.15}_{-0.11}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.46	$1090.60 \pm 0.57$
$n_s$	0.9609	$0.9581^{+0.0079}_{-0.0089}$	$A^{\text{kSZ}}$	0.0	—	$r_*$	144.55	$144.48 \pm 0.60$
$\ln(10^{10} A_s)$	3.099	$3.084^{+0.066}_{-0.078}$	$\beta_1^1$	0.64	$0.57 \pm 0.58$	$100\theta_*$	1.04137	$1.04134 \pm 0.00062$
$A_{100}^{\text{PS}}$	140	$172^{+60}_{-70}$	$\Omega_\Lambda$	0.7094	$0.713 \pm 0.021$	$z_{\text{drag}}$	1059.32	$1059.18 \pm 0.60$
$A_{143}^{\text{PS}}$	51.7	$54 \pm 10$	$\Omega_m$	0.2906	$0.287 \pm 0.021$	$r_{\text{drag}}$	147.32	$147.27 \pm 0.59$
$A_{217}^{\text{PS}}$	116.8	$107^{+20}_{-20}$	$\sigma_8$	0.8649	$0.869^{+0.038}_{-0.043}$	$k_D$	0.14028	$0.14027 \pm 0.00062$
$A_{143}^{\text{CIB}}$	4.19	$< 10.3$	$z_{\text{re}}$	11.42	$10.5^{+3.6}_{-3.2}$	$100\theta_D$	0.161340	$0.16143 \pm 0.00035$
$A_{217}^{\text{CIB}}$	27.8	$29^{+6}_{-9}$	$H_0$	70.17	$70.9^{+2.6}_{-3.2}$	$z_{\text{eq}}$	3404	$3415 \pm 61$
$A_{143}^{\text{tSZ}}$	8.84	—	$10^9 A_s$	2.217	$2.19^{+0.14}_{-0.18}$	$100\theta_{\text{eq}}$	0.8123	$0.810 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.902	$> 0.853$	$\Omega_m h^2$	0.14311	$0.1436 \pm 0.0026$	$r_{\text{drag}}/D_V(0.57)$	0.07203	$0.07198 \pm 0.00064$

Best-fit  $\chi^2_{\text{eff}} = 7791.75$ ; R-1 = 0.03817

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.24 6DF: 0.29 DR9: 0.52 CMB - lowl: -6.79 CamSpec: 7796.81

### 18.11 base\_w\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022114	$0.02208 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.426	$0.41^{+0.22}_{-0.27}$	$\Omega_m h^3$	0.10639	$0.1064 \pm 0.0042$
$\Omega_c h^2$	0.11951	$0.1198 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.525	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247730	$0.24772 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04136	$1.04133 \pm 0.00065$	$c_{100}$	1.000589	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8351	$1.836^{+0.016}_{-0.015}$
$\tau$	0.0951	$0.095^{+0.038}_{-0.044}$	$c_{217}$	0.99627	$0.9964 \pm 0.0014$	Age/Gyr	13.679	$13.687 \pm 0.054$
$w$	-1.237	$-1.24^{+0.11}_{-0.092}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.31	$1090.38 \pm 0.63$
$n_s$	0.9628	$0.9612^{+0.0089}_{-0.010}$	$A^{\text{kSZ}}$	0.00	$< 6.01$	$r_*$	144.74	$144.69 \pm 0.66$
$\ln(10^{10} A_s)$	3.100	$3.100^{+0.072}_{-0.082}$	$\beta_1^1$	0.58	$0.52 \pm 0.58$	$100\theta_*$	1.04151	$1.04149 \pm 0.00064$
$A_{100}^{\text{PS}}$	139	$167 \pm 60$	$\Omega_\Lambda$	0.7456	$0.743^{+0.021}_{-0.017}$	$z_{\text{drag}}$	1059.40	$1059.33 \pm 0.62$
$A_{143}^{\text{PS}}$	51.8	$53 \pm 10$	$\Omega_m$	0.2544	$0.257^{+0.017}_{-0.021}$	$r_{\text{drag}}$	147.50	$147.45 \pm 0.63$
$A_{217}^{\text{PS}}$	117.1	$108^{+20}_{-10}$	$\sigma_8$	0.9011	$0.902 \pm 0.036$	$k_D$	0.14014	$0.14016 \pm 0.00063$
$A_{143}^{\text{CIB}}$	4.27	$< 10.1$	$z_{\text{re}}$	11.52	$11.3^{+3.8}_{-3.1}$	$100\theta_D$	0.161309	$0.16135 \pm 0.00036$
$A_{217}^{\text{CIB}}$	27.5	$28^{+6}_{-9}$	$H_0$	74.78	$74.6 \pm 2.6$	$z_{\text{eq}}$	3384	$3391 \pm 69$
$A_{143}^{\text{tSZ}}$	8.76	—	$10^9 A_s$	2.220	$2.23^{+0.15}_{-0.19}$	$100\theta_{\text{eq}}$	0.8162	$0.815^{+0.013}_{-0.015}$
$r_{143 \times 217}^{\text{PS}}$	0.896	$> 0.849$	$\Omega_m h^2$	0.14227	$0.1426 \pm 0.0029$	$r_{\text{drag}}/D_V(0.57)$	0.07324	$0.0731 \pm 0.0010$

Best-fit  $\chi^2_{\text{eff}} = 7790.04$ ; R-1 = 0.02458

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.37 CamSpec: 7796.60 Hubble - HST: 0.04

## 18.12 base\_w\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022125	$0.02212 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.445	$0.41^{+0.21}_{-0.28}$	$\Omega_m h^3$	0.10182	$0.1018 \pm 0.0031$
$\Omega_c h^2$	0.11945	$0.1193 \pm 0.0030$	$\gamma^{\text{CIB}}$	0.522	$0.53^{+0.14}_{-0.12}$	$Y_P$	0.247735	$0.24773 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04136	$1.04141 \pm 0.00066$	$c_{100}$	1.000584	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8354	$1.833 \pm 0.015$
$\tau$	0.0950	$0.099 \pm 0.039$	$c_{217}$	0.99631	$0.9964 \pm 0.0014$	Age/Gyr	13.729	$13.729 \pm 0.060$
$w$	-1.134	$-1.134 \pm 0.071$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.29	$1090.29 \pm 0.62$
$n_s$	0.9632	$0.9625^{+0.0088}_{-0.010}$	$A^{\text{kSZ}}$	0.00	$< 5.94$	$r_*$	144.75	$144.80 \pm 0.65$
$\ln(10^{10} A_s)$	3.100	$3.106 \pm 0.072$	$\beta_1^1$	0.62	$0.52 \pm 0.58$	$100\theta_*$	1.04151	$1.04157 \pm 0.00065$
$A_{100}^{\text{PS}}$	134	$168 \pm 60$	$\Omega_\Lambda$	0.7225	$0.722 \pm 0.020$	$z_{\text{drag}}$	1059.40	$1059.37 \pm 0.62$
$A_{143}^{\text{PS}}$	52.8	$53 \pm 10$	$\Omega_m$	0.2775	$0.278 \pm 0.020$	$r_{\text{drag}}$	147.50	$147.56 \pm 0.63$
$A_{217}^{\text{PS}}$	117.6	$107 \pm 20$	$\sigma_8$	0.8715	$0.873 \pm 0.033$	$k_D$	0.14014	$0.14007 \pm 0.00063$
$A_{143}^{\text{CIB}}$	3.25	$< 10.0$	$z_{\text{re}}$	11.51	$11.6^{+3.7}_{-3.0}$	$100\theta_D$	0.161296	$0.16133 \pm 0.00036$
$A_{217}^{\text{CIB}}$	27.1	$28^{+6}_{-9}$	$H_0$	71.59	$71.6 \pm 2.2$	$z_{\text{eq}}$	3383	$3379 \pm 68$
$A_{143}^{\text{tSZ}}$	9.12	—	$10^9 A_s$	2.219	$2.24^{+0.15}_{-0.19}$	$100\theta_{\text{eq}}$	0.8164	$0.817 \pm 0.013$
$r_{143 \times 217}^{\text{PS}}$	0.894	$> 0.852$	$\Omega_m h^2$	0.14222	$0.1421 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07260	$0.0726^{+0.0010}_{-0.0012}$

Best-fit  $\chi^2_{\text{eff}} = 8216.77$ ; R-1 = 0.02840

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.25 CamSpec: 7796.85 SN - SNLS: 426.37

### 18.13 base\_w\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022105	$0.02206 \pm 0.00032$	$r_{143 \times 217}^{\text{CIB}}$	0.671	$0.41^{+0.22}_{-0.28}$	$\Omega_m h^3$	0.09986	$0.1000 \pm 0.0038$
$\Omega_c h^2$	0.11955	$0.1199 \pm 0.0030$	$\gamma^{\text{CIB}}$	0.565	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.247726	$0.24771 \pm 0.00014$
$100\theta_{\text{MC}}$	1.04135	$1.04133 \pm 0.00066$	$c_{100}$	1.000595	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8380	$1.836 \pm 0.015$
$\tau$	0.0937	$0.094 \pm 0.038$	$c_{217}$	0.99641	$0.9963 \pm 0.0014$	Age/Gyr	13.756	$13.763 \pm 0.065$
$w$	-1.091	$-1.095 \pm 0.088$	$\xi^{\text{tSZ-CIB}}$	0.36	—	$z_*$	1090.32	$1090.42 \pm 0.63$
$n_s$	0.9644	$0.9608^{+0.0084}_{-0.010}$	$A^{\text{kSZ}}$	0.70	$< 6.08$	$r_*$	144.74	$144.68 \pm 0.65$
$\ln(10^{10} A_s)$	3.099	$3.098^{+0.072}_{-0.080}$	$\beta_1^1$	0.67	$0.54 \pm 0.58$	$100\theta_*$	1.04149	$1.04148 \pm 0.00064$
$A_{100}^{\text{PS}}$	154	$170 \pm 60$	$\Omega_\Lambda$	0.7111	$0.709^{+0.025}_{-0.022}$	$z_{\text{drag}}$	1059.36	$1059.29 \pm 0.63$
$A_{143}^{\text{PS}}$	65.7	$53 \pm 10$	$\Omega_m$	0.2889	$0.291^{+0.022}_{-0.025}$	$r_{\text{drag}}$	147.50	$147.45 \pm 0.63$
$A_{217}^{\text{PS}}$	121.6	$107 \pm 20$	$\sigma_8$	0.8591	$0.860 \pm 0.035$	$k_D$	0.14013	$0.14014 \pm 0.00063$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$z_{\text{re}}$	11.42	$11.2^{+3.8}_{-3.1}$	$100\theta_D$	0.161317	$0.16138 \pm 0.00036$
$A_{217}^{\text{CIB}}$	24.7	$29^{+6}_{-9}$	$H_0$	70.18	$70.1 \pm 2.6$	$z_{\text{eq}}$	3385	$3393 \pm 68$
$A_{143}^{\text{tSZ}}$	5.59	—	$10^9 A_s$	2.217	$2.22^{+0.15}_{-0.19}$	$100\theta_{\text{eq}}$	0.8160	$0.815^{+0.012}_{-0.014}$
$r_{143 \times 217}^{\text{PS}}$	0.944	$> 0.853$	$\Omega_m h^2$	0.14230	$0.1426 \pm 0.0028$	$r_{\text{drag}}/D_V(0.57)$	0.07225	$0.07212^{+0.00096}_{-0.0012}$

Best-fit  $\chi^2_{\text{eff}} = 7920.61$ ; R-1 = 0.02847

$\chi^2_{\text{eff}}$ : CMB - lowl: -7.38 CamSpec: 7797.66 SN - Union2.1: 129.88

### 18.14 base\_w\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02265	$0.02268 \pm 0.00054$	$\sigma_8$	0.807	$0.81^{+0.14}_{-0.17}$	$r_*$	145.58	$145.9 \pm 1.2$
$\Omega_c h^2$	0.11474	$0.1136 \pm 0.0048$	$z_{\text{re}}$	10.85	$10.7 \pm 1.1$	$100\theta_*$	1.04063	$1.0403 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04053	$1.0402 \pm 0.0023$	$H_0$	68.3	$71^{+9}_{-20}$	$z_{\text{drag}}$	1060.28	$1060.2 \pm 1.2$
$\tau$	0.0903	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.224	$2.202^{+0.063}_{-0.074}$	$r_{\text{drag}}$	148.18	$148.5 \pm 1.2$
$w$	-0.969	$-1.02^{+0.67}_{-0.26}$	$\Omega_m h^2$	0.13803	$0.1369 \pm 0.0046$	$k_D$	0.13983	$0.1395 \pm 0.0014$
$n_s$	0.9750	$0.975^{+0.014}_{-0.016}$	$\Omega_m h^3$	0.0943	$0.097^{+0.014}_{-0.027}$	$100\theta_D$	0.16060	$0.16058^{+0.00051}_{-0.00057}$
$\ln(10^{10} A_s)$	3.1019	$3.092 \pm 0.031$	$Y_P$	0.247958	$0.24797 \pm 0.00023$	$z_{\text{eq}}$	3283	$3256 \pm 110$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8566	$1.844 \pm 0.031$	$100\theta_{\text{eq}}$	0.8358	$0.842 \pm 0.022$
$\Omega_\Lambda$	0.704	$0.695^{+0.16}_{-0.074}$	Age/Gyr	13.779	$13.84^{+0.22}_{-0.42}$	$r_{\text{drag}}/D_V(0.57)$	0.07265	$0.0724^{+0.0048}_{-0.0036}$
$\Omega_m$	0.296	$0.305^{+0.074}_{-0.16}$	$z_*$	1089.21	$1089.09 \pm 0.89$			

Best-fit  $\chi^2_{\text{eff}} = 7557.84$ ; R-1 = 0.00843

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.84

### 18.15 base\_w\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02261	$0.02256 \pm 0.00052$	$\sigma_8$	0.806	$0.806^{+0.052}_{-0.065}$	$r_*$	145.45	$145.5 \pm 1.1$
$\Omega_c h^2$	0.11535	$0.1152 \pm 0.0044$	$z_{\text{re}}$	10.77	$10.6 \pm 1.1$	$100\theta_*$	1.04026	$1.0399 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04015	$1.0398 \pm 0.0022$	$H_0$	67.69	$68.1^{+2.4}_{-3.5}$	$z_{\text{drag}}$	1060.24	$1060.1 \pm 1.1$
$\tau$	0.0890	$0.087^{+0.012}_{-0.015}$	$10^9 A_s$	2.222	$2.204^{+0.060}_{-0.070}$	$r_{\text{drag}}$	148.06	$148.2 \pm 1.1$
$w$	-0.960	$-0.98^{+0.17}_{-0.11}$	$\Omega_m h^2$	0.13860	$0.1384 \pm 0.0042$	$k_D$	0.13993	$0.1398 \pm 0.0013$
$n_s$	0.9738	$0.970 \pm 0.014$	$\Omega_m h^3$	0.0938	$0.0944^{+0.0055}_{-0.0073}$	$100\theta_D$	0.16057	$0.16062^{+0.00051}_{-0.00058}$
$\ln(10^{10} A_s)$	3.1009	$3.093 \pm 0.030$	$Y_P$	0.247942	$0.24792 \pm 0.00022$	$z_{\text{eq}}$	3296	$3292 \pm 100$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.8594	$1.852 \pm 0.029$	$100\theta_{\text{eq}}$	0.8328	$0.834 \pm 0.020$
$\Omega_\Lambda$	0.6975	$0.701^{+0.019}_{-0.023}$	Age/Gyr	13.802	$13.815 \pm 0.093$	$r_{\text{drag}}/D_V(0.57)$	0.07228	$0.07226 \pm 0.00073$
$\Omega_m$	0.3025	$0.299^{+0.023}_{-0.019}$	$z_*$	1089.31	$1089.38 \pm 0.84$			

Best-fit  $\chi^2_{\text{eff}} = 7559.25$ ; R-1 = 0.02245

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.01 DR7: 0.52 DR9: 0.88 CMB - WMAP: 7557.84

### 18.16 base\_w\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02271	$0.02261 \pm 0.00051$	$\sigma_8$	0.8483	$0.849^{+0.045}_{-0.051}$	$r_*$	145.82	$145.8 \pm 1.2$
$\Omega_c h^2$	0.11366	$0.1140 \pm 0.0046$	$z_{\text{re}}$	10.98	$10.6 \pm 1.1$	$100\theta_*$	1.04054	$1.0402 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04044	$1.0401 \pm 0.0023$	$H_0$	73.84	$74.0 \pm 2.6$	$z_{\text{drag}}$	1060.31	$1060.1 \pm 1.1$
$\tau$	0.0927	$0.088^{+0.013}_{-0.015}$	$10^9 A_s$	2.221	$2.202^{+0.062}_{-0.073}$	$r_{\text{drag}}$	148.41	$148.5 \pm 1.2$
$w$	-1.119	$-1.14^{+0.12}_{-0.10}$	$\Omega_m h^2$	0.13702	$0.1372 \pm 0.0045$	$k_D$	0.13963	$0.1395 \pm 0.0014$
$n_s$	0.9749	$0.972 \pm 0.013$	$\Omega_m h^3$	0.1012	$0.1015 \pm 0.0050$	$100\theta_D$	0.16055	$0.16065 \pm 0.00052$
$\ln(10^{10} A_s)$	3.1007	$3.091^{+0.029}_{-0.033}$	$Y_P$	0.247983	$0.24794 \pm 0.00022$	$z_{\text{eq}}$	3259	$3263 \pm 110$
$A_{\text{tSZ}}$	1.01	—	$10^9 A_s e^{-2\tau}$	1.8455	$1.845^{+0.030}_{-0.033}$	$100\theta_{\text{eq}}$	0.8405	$0.840 \pm 0.021$
$\Omega_\Lambda$	0.7487	$0.748^{+0.021}_{-0.017}$	Age/Gyr	13.671	$13.688 \pm 0.096$	$r_{\text{drag}}/D_V(0.57)$	0.07435	$0.0742 \pm 0.0014$
$\Omega_m$	0.2513	$0.252^{+0.017}_{-0.021}$	$z_*$	1089.05	$1089.21 \pm 0.84$			

Best-fit  $\chi^2_{\text{eff}} = 7558.20$ ; R-1 = 0.02059

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.19 Hubble - HST: 0.01

### 18.17 base\_w\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02271	$0.02266 \pm 0.00051$	$\sigma_8$	0.8313	$0.825 \pm 0.037$	$r_*$	145.89	$146.0 \pm 1.1$
$\Omega_c h^2$	0.11340	$0.1130 \pm 0.0044$	$z_{\text{re}}$	10.91	$10.6 \pm 1.1$	$100\theta_*$	1.04040	$1.0404 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04029	$1.0403 \pm 0.0022$	$H_0$	72.20	$72.2 \pm 2.4$	$z_{\text{drag}}$	1060.31	$1060.2 \pm 1.1$
$\tau$	0.0918	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.215	$2.198^{+0.061}_{-0.073}$	$r_{\text{drag}}$	148.47	$148.7 \pm 1.2$
$w$	-1.070	$-1.068 \pm 0.075$	$\Omega_m h^2$	0.13676	$0.1363 \pm 0.0043$	$k_D$	0.13956	$0.1393 \pm 0.0014$
$n_s$	0.9751	$0.974 \pm 0.013$	$\Omega_m h^3$	0.09875	$0.0984 \pm 0.0038$	$100\theta_D$	0.16053	$0.16064 \pm 0.00052$
$\ln(10^{10} A_s)$	3.0981	$3.090^{+0.029}_{-0.032}$	$Y_P$	0.247985	$0.24796 \pm 0.00021$	$z_{\text{eq}}$	3252	$3242 \pm 100$
$A_{\text{tSZ}}$	1.04	—	$10^9 A_s e^{-2\tau}$	1.8437	$1.840 \pm 0.030$	$100\theta_{\text{eq}}$	0.8416	$0.844 \pm 0.021$
$\Omega_\Lambda$	0.7377	$0.737^{+0.024}_{-0.020}$	Age/Gyr	13.703	$13.71 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07399	$0.0741 \pm 0.0015$
$\Omega_m$	0.2623	$0.263^{+0.020}_{-0.024}$	$z_*$	1089.02	$1089.07 \pm 0.81$			

Best-fit  $\chi^2_{\text{eff}} = 7983.98$ ; R-1 = 0.02241

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.10 SN - SNLS: 425.88



### 18.18 base\_w\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02265	$0.02263 \pm 0.00051$	$\sigma_8$	0.8219	$0.812 \pm 0.042$	$r_*$	145.73	$145.9 \pm 1.2$
$\Omega_c h^2$	0.11421	$0.1138 \pm 0.0046$	$z_{\text{re}}$	11.00	$10.6 \pm 1.1$	$100\theta_*$	1.04030	$1.0402 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04020	$1.0401 \pm 0.0022$	$H_0$	70.31	$70.0 \pm 2.8$	$z_{\text{drag}}$	1060.24	$1060.1 \pm 1.1$
$\tau$	0.0923	$0.088^{+0.013}_{-0.015}$	$10^9 A_s$	2.222	$2.200^{+0.061}_{-0.072}$	$r_{\text{drag}}$	148.33	$148.5 \pm 1.2$
$w$	-1.027	$-1.016 \pm 0.093$	$\Omega_m h^2$	0.13750	$0.1371 \pm 0.0045$	$k_D$	0.13967	$0.1395 \pm 0.0014$
$n_s$	0.9733	$0.973 \pm 0.013$	$\Omega_m h^3$	0.09668	$0.0960 \pm 0.0045$	$100\theta_D$	0.16057	$0.16062^{+0.00051}_{-0.00057}$
$\ln(10^{10} A_s)$	3.1009	$3.091^{+0.029}_{-0.032}$	$Y_P$	0.247957	$0.24795 \pm 0.00022$	$z_{\text{eq}}$	3270	$3260 \pm 110$
$A_{\text{tSZ}}$	1.09	—	$10^9 A_s e^{-2\tau}$	1.8473	$1.844 \pm 0.031$	$100\theta_{\text{eq}}$	0.8379	$0.840 \pm 0.021$
$\Omega_\Lambda$	0.7219	$0.719^{+0.029}_{-0.024}$	Age/Gyr	13.746	$13.76 \pm 0.11$	$r_{\text{drag}}/D_V(0.57)$	0.07328	$0.0733 \pm 0.0015$
$\Omega_m$	0.2781	$0.281^{+0.024}_{-0.029}$	$z_*$	1089.17	$1089.17 \pm 0.84$			

Best-fit  $\chi^2_{\text{eff}} = 7687.97$ ; R-1 = 0.01811

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.11 SN - Union2.1: 129.85

### 18.19 base\_w\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022094	$0.02199 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.397	$0.42 \pm 0.22$	$\Omega_m h^3$	0.0992	$0.1014^{+0.0045}_{-0.0057}$
$\Omega_c h^2$	0.11960	$0.1207 \pm 0.0024$	$\gamma^{\text{CIB}}$	0.547	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247721	$0.24768 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04128	$1.04120 \pm 0.00061$	$c_{100}$	1.000596	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8383	$1.839 \pm 0.012$
$\tau$	0.0935	$0.088^{+0.012}_{-0.014}$	$c_{217}$	0.99635	$0.9964 \pm 0.0014$	Age/Gyr	13.767	$13.761 \pm 0.051$
$w$	-1.076	$-1.13^{+0.14}_{-0.10}$	$\xi^{\text{tSZ-CIB}}$	0.39	—	$z_*$	1090.339	$1090.57 \pm 0.49$
$n_s$	0.9641	$0.9585 \pm 0.0068$	$A^{\text{kSZ}}$	0.82	$< 6.15$	$r_*$	144.74	$144.53 \pm 0.56$
$\ln(10^{10} A_s)$	3.0984	$3.088^{+0.023}_{-0.026}$	$\beta_1^1$	0.67	$0.55 \pm 0.56$	$100\theta_*$	1.04144	$1.04136 \pm 0.00060$
$A_{100}^{\text{PS}}$	149	$171 \pm 60$	$\Omega_\Lambda$	0.7068	$0.713 \pm 0.021$	$z_{\text{drag}}$	1059.36	$1059.18 \pm 0.56$
$A_{143}^{\text{PS}}$	64.3	$54 \pm 10$	$\Omega_m$	0.2932	$0.287 \pm 0.021$	$r_{\text{drag}}$	147.50	$147.33 \pm 0.56$
$A_{217}^{\text{PS}}$	123.4	$107^{+20}_{-20}$	$\sigma_8$	0.8548	$0.868^{+0.036}_{-0.043}$	$k_D$	0.14012	$0.14022 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$z_{\text{re}}$	11.40	$11.0 \pm 1.1$	$100\theta_D$	0.161325	$0.16143 \pm 0.00033$
$A_{217}^{\text{CIB}}$	23.7	$29^{+6}_{-9}$	$H_0$	69.68	$70.8^{+2.5}_{-3.2}$	$z_{\text{eq}}$	3386	$3410 \pm 55$
$A^{\text{tSZ}}_{143}$	5.86	—	$10^9 A_s$	2.216	$2.194^{+0.050}_{-0.059}$	$100\theta_{\text{eq}}$	0.8158	$0.811 \pm 0.010$
$r_{143 \times 217}^{\text{PS}}$	0.947	$> 0.852$	$\Omega_m h^2$	0.14234	$0.1433 \pm 0.0023$	$r_{\text{drag}}/D_V(0.57)$	0.07211	$0.07203 \pm 0.00061$

Best-fit  $\chi^2_{\text{eff}} = 9806.39$ ; R-1 = 0.00765

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.62 DR7: 0.27 6DF: 0.21 CMB - lowLike: 2014.51 lowl: -7.31 CamSpec: 7797.50

## 18.20 base\_w\_planck\_lowl\_lowLike\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022234	$0.02208 \pm 0.00026$	$r_{143 \times 217}^{\text{CIB}}$	0.563	$0.44 \pm 0.22$	$\Omega_m h^3$	0.09684	$0.0990^{+0.0037}_{-0.0046}$
$\Omega_c h^2$	0.11816	$0.1191 \pm 0.0020$	$\gamma^{\text{CIB}}$	0.539	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247781	$0.24772 \pm 0.00011$
$100\theta_{\text{MC}}$	1.04148	$1.04133 \pm 0.00059$	$c_{100}$	1.000582	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8329	$1.832 \pm 0.010$
$\tau$	0.0942	$0.087^{+0.012}_{-0.014}$	$c_{217}$	0.99644	$0.9964 \pm 0.0014$	Age/Gyr	13.774	$13.769 \pm 0.050$
$w$	-1.019	$-1.07^{+0.11}_{-0.086}$	$\xi^{\text{tSZ-CIB}}$	0.17	—	$z_*$	1090.032	$1090.31 \pm 0.44$
$n_s$	0.9672	$0.9613 \pm 0.0063$	$A^{\text{kSZ}}$	1.03	—	$r_*$	145.002	$144.87 \pm 0.46$
$\ln(10^{10} A_s)$	3.0969	$3.082 \pm 0.023$	$\beta_1^1$	0.69	$0.48 \pm 0.56$	$100\theta_*$	1.04161	$1.04149 \pm 0.00058$
$A_{100}^{\text{PS}}$	154	$171 \pm 60$	$\Omega_\Lambda$	0.7008	$0.708 \pm 0.019$	$z_{\text{drag}}$	1059.55	$1059.28 \pm 0.56$
$A_{143}^{\text{PS}}$	63.2	$53 \pm 10$	$\Omega_m$	0.2992	$0.292 \pm 0.019$	$r_{\text{drag}}$	147.724	$147.64 \pm 0.47$
$A_{217}^{\text{PS}}$	119.1	$106^{+20}_{-20}$	$\sigma_8$	0.8340	$0.844^{+0.028}_{-0.032}$	$k_D$	0.14000	$0.13996 \pm 0.00056$
$A_{143}^{\text{CIB}}$	0.0	$< 11.2$	$z_{\text{re}}$	11.40	$10.8 \pm 1.1$	$100\theta_D$	0.161201	$0.16137 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.4	$29^{+6}_{-9}$	$H_0$	68.66	$69.8^{+2.2}_{-2.7}$	$z_{\text{eq}}$	3354.8	$3374 \pm 45$
$A^{\text{tSZ}}_{143}$	5.69	—	$10^9 A_s$	2.213	$2.180^{+0.047}_{-0.055}$	$100\theta_{\text{eq}}$	0.8219	$0.8180 \pm 0.0085$
$r_{143 \times 217}^{\text{PS}}$	0.900	$> 0.848$	$\Omega_m h^2$	0.14104	$0.1418 \pm 0.0019$	$r_{\text{drag}}/D_V(0.57)$	0.07219	$0.07221 \pm 0.00061$

Best-fit  $\chi^2_{\text{eff}} = 9816.92$ ; R-1 = 0.00977

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.73 DR7: 0.40 6DF: 0.08 CMB - lowLike: 2014.41 lensing: 9.76 lowl: -7.66 CamSpec: 7798.53

## 18.21 base\_w\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022050	$0.02203 \pm 0.00026$	$\beta_1^1$	0.43	$0.40 \pm 0.55$	$\sigma_8$	0.8657	$0.867^{+0.035}_{-0.042}$
$\Omega_c h^2$	0.12049	$0.1207 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.53 \pm 0.59$	$z_{\text{re}}$	11.53	$11.0 \pm 1.1$
$100\theta_{\text{MC}}$	1.04122	$1.04121 \pm 0.00061$	$A_{218}^{\text{PS, ACT}}$	76.15	$76.8 \pm 4.5$	$H_0$	70.27	$70.8^{+2.5}_{-3.1}$
$\tau$	0.0946	$0.089 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.33	$7.66^{+1.4}_{-1.6}$	$10^9 A_s$	2.219	$2.195^{+0.051}_{-0.057}$
$w$	-1.109	$-1.13^{+0.13}_{-0.10}$	$A_{150}^{\text{PS, SPT}}$	9.80	$10.06 \pm 0.51$	$\Omega_m h^2$	0.14319	$0.1433 \pm 0.0023$
$n_s$	0.9576	$0.9566 \pm 0.0065$	$A_{220}^{\text{PS, SPT}}$	72.92	$74.3 \pm 4.5$	$\Omega_m h^3$	0.10061	$0.1015^{+0.0044}_{-0.0055}$
$\ln(10^{10} A_s)$	3.0995	$3.089 \pm 0.024$	$r_{95 \times 150}^{\text{PS}}$	0.792	$0.830 \pm 0.090$	$Y_p$	0.247703	$0.24769 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$214 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.544	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8364	$1.837 \pm 0.012$
$A_{143}^{\text{PS}}$	72.6	$73.1 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9115	$0.937 \pm 0.023$	Age/Gyr	13.7594	$13.757 \pm 0.050$
$A_{217}^{\text{PS}}$	61.0	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.43 \pm 0.19$	$z_*$	1090.473	$1090.52 \pm 0.48$
$A_{143}^{\text{CIB}}$	3.16	$3.23 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.841	$0.84 \pm 0.20$	$r_*$	144.54	$144.51 \pm 0.54$
$A_{217}^{\text{CIB}}$	52.1	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9911	$0.9919 \pm 0.0073$	$100\theta_*$	1.04138	$1.04137 \pm 0.00060$
$A_{143}^{\text{tSZ}}$	4.59	$2.51^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0026	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.32	$1059.27 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.817	$0.821^{+0.069}_{-0.077}$	$y_{148}^{\text{ACTe}}$	0.9874	$0.9882 \pm 0.0072$	$r_{\text{drag}}$	147.31	$147.29 \pm 0.55$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9607	$0.964 \pm 0.010$	$k_D$	0.14029	$0.14028 \pm 0.00060$
$\gamma^{\text{CIB}}$	0.657	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9841	$0.984 \pm 0.020$	$100\theta_D$	0.161350	$0.16138 \pm 0.00031$
$c_{100}$	1.000582	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9844	$0.9872 \pm 0.0096$	$z_{\text{eq}}$	3406	$3410 \pm 54$
$c_{217}$	0.99734	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0165	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8120	$0.811 \pm 0.010$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.416$	$\Omega_\Lambda$	0.7100	$0.713 \pm 0.020$	$r_{\text{drag}}/D_V(0.57)$	0.07204	$0.07204 \pm 0.00061$
$A^{\text{kSZ}}$	1.89	$5.35^{+2.8}_{-1.9}$	$\Omega_m$	0.2900	$0.287 \pm 0.020$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.68$ ; R-1 =0.00993

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.23 DR9: 0.53 6DF: 0.30 CMB - lowLike: 2014.69 lowl: -6.04 CamSpec: 7807.25 highL: 692.61

## 18.22 base\_w\_planck\_lowl\_lowLike\_highL\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022189	$0.02211 \pm 0.00025$	$\beta_1^1$	0.41	$0.36 \pm 0.54$	$\sigma_8$	0.8483	$0.846^{+0.028}_{-0.032}$
$\Omega_c h^2$	0.11916	$0.1192 \pm 0.0019$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.66 \pm 0.59$	$z_{\text{re}}$	11.53	$10.9 \pm 1.1$
$100\theta_{\text{MC}}$	1.04140	$1.04133 \pm 0.00058$	$A_{218}^{\text{PS, ACT}}$	76.55	$77.0 \pm 4.6$	$H_0$	69.48	$69.9^{+2.2}_{-2.7}$
$\tau$	0.0954	$0.088 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.64	$7.86^{+1.3}_{-1.6}$	$10^9 A_s$	2.217	$2.184 \pm 0.050$
$w$	-1.060	$-1.08^{+0.11}_{-0.086}$	$A_{150}^{\text{PS, SPT}}$	9.997	$10.20 \pm 0.51$	$\Omega_m h^2$	0.14200	$0.1420 \pm 0.0018$
$n_s$	0.9609	$0.9594 \pm 0.0059$	$A_{220}^{\text{PS, SPT}}$	73.55	$74.6 \pm 4.6$	$\Omega_m h^3$	0.09867	$0.0993^{+0.0037}_{-0.0046}$
$\ln(10^{10} A_s)$	3.0987	$3.083 \pm 0.023$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.830 \pm 0.088$	$Y_p$	0.247762	$0.24773 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$216 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.537	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8318	$1.8303 \pm 0.0096$
$A_{143}^{\text{PS}}$	71.9	$74.3 \pm 7.9$	$r_{150 \times 220}^{\text{PS}}$	0.9083	$0.934 \pm 0.023$	Age/Gyr	13.7609	$13.764 \pm 0.049$
$A_{217}^{\text{PS}}$	59.7	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.421	$0.43^{+0.18}_{-0.21}$	$z_*$	1090.178	$1090.29 \pm 0.43$
$A_{143}^{\text{CIB}}$	3.14	$3.23 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.851	$0.84 \pm 0.20$	$r_*$	144.776	$144.83 \pm 0.45$
$A_{217}^{\text{CIB}}$	52.3	$49.7 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9922	$0.9920 \pm 0.0073$	$100\theta_*$	1.04154	$1.04148 \pm 0.00057$
$A_{143}^{\text{tSZ}}$	4.45	$2.44^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0040	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.55	$1059.34 \pm 0.54$
$r_{143 \times 217}^{\text{PS}}$	0.816	$0.825^{+0.069}_{-0.077}$	$y_{148}^{\text{ACTe}}$	0.9885	$0.9881 \pm 0.0072$	$r_{\text{drag}}$	147.505	$147.59 \pm 0.46$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9625	$0.964 \pm 0.010$	$k_D$	0.14019	$0.14004 \pm 0.00054$
$\gamma^{\text{CIB}}$	0.658	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9845	$0.984^{+0.019}_{-0.022}$	$100\theta_D$	0.161221	$0.16133 \pm 0.00031$
$c_{100}$	1.000588	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9867	$0.9880 \pm 0.0095$	$z_{\text{eq}}$	3377.6	$3377 \pm 43$
$c_{217}$	0.99745	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0190	$1.025 \pm 0.023$	$100\theta_{\text{eq}}$	0.8176	$0.8175 \pm 0.0083$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.414$	$\Omega_\Lambda$	0.7059	$0.709 \pm 0.019$	$r_{\text{drag}}/D_V(0.57)$	0.07217	$0.07222 \pm 0.00061$
$A^{\text{kSZ}}$	1.43	$4.80^{+2.7}_{-1.9}$	$\Omega_m$	0.2941	$0.291 \pm 0.019$			

Best-fit  $\chi_{\text{eff}}^2 = 10518.63$ ; R-1 = 0.02832

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.26 DR9: 0.71 6DF: 0.18 CMB - lowLike: 2014.62 lensing: 10.15 lowl: -6.57 CamSpec: 7808.24 highL: 690.92

### 18.23 base\_w\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022072	$0.02199 \pm 0.00025$	$\beta_1^1$	0.45	$0.42 \pm 0.55$	$\sigma_8$	0.8832	$0.889 \pm 0.030$
$\Omega_c h^2$	0.12080	$0.1214 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.32	$10.53 \pm 0.59$	$z_{\text{re}}$	11.53	$10.9 \pm 1.1$
$100\theta_{\text{MC}}$	1.04120	$1.04111 \pm 0.00060$	$A_{218}^{\text{PS, ACT}}$	76.63	$76.8 \pm 4.5$	$H_0$	71.89	$72.6 \pm 2.0$
$\tau$	0.0946	$0.088 \pm 0.013$	$A_{95}^{\text{PS, SPT}}$	7.51	$7.65^{+1.4}_{-1.6}$	$10^9 A_s$	2.221	$2.193^{+0.050}_{-0.058}$
$w$	-1.167	$-1.20^{+0.10}_{-0.087}$	$A_{150}^{\text{PS, SPT}}$	9.846	$10.05 \pm 0.50$	$\Omega_m h^2$	0.14352	$0.1440 \pm 0.0021$
$n_s$	0.9570	$0.9548 \pm 0.0063$	$A_{220}^{\text{PS, SPT}}$	73.40	$74.3 \pm 4.5$	$\Omega_m h^3$	0.10318	$0.1046^{+0.0036}_{-0.0041}$
$\ln(10^{10} A_s)$	3.1005	$3.088 \pm 0.024$	$r_{95 \times 150}^{\text{PS}}$	0.778	$0.831 \pm 0.089$	$Y_p$	0.247712	$0.24768 \pm 0.00011$
$A_{100}^{\text{PS}}$	206	$215 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.527	$0.58^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8383	$1.840 \pm 0.011$
$A_{143}^{\text{PS}}$	72.4	$73.3 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9117	$0.937 \pm 0.023$	Age/Gyr	13.7295	$13.730 \pm 0.039$
$A_{217}^{\text{PS}}$	61.4	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.414	$0.43 \pm 0.19$	$z_*$	1090.472	$1090.64 \pm 0.46$
$A_{143}^{\text{CIB}}$	3.02	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.848	$0.85 \pm 0.20$	$r_*$	144.44	$144.35 \pm 0.51$
$A_{217}^{\text{CIB}}$	51.3	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9915	$0.9918 \pm 0.0073$	$100\theta_*$	1.04137	$1.04127 \pm 0.00059$
$A_{143}^{\text{tSZ}}$	4.30	$2.52^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0028	$1.005 \pm 0.014$	$z_{\text{drag}}$	1059.40	$1059.23 \pm 0.53$
$r_{143 \times 217}^{\text{PS}}$	0.806	$0.823 \pm 0.070$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9880 \pm 0.0071$	$r_{\text{drag}}$	147.20	$147.14 \pm 0.52$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.929$	$y_{217}^{\text{ACTe}}$	0.9613	$0.963 \pm 0.010$	$k_D$	0.14041	$0.14042 \pm 0.00058$
$\gamma^{\text{CIB}}$	0.652	$0.639 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9841	$0.983 \pm 0.020$	$100\theta_D$	0.161307	$0.16140 \pm 0.00031$
$c_{100}$	1.000593	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9850	$0.9871 \pm 0.0097$	$z_{\text{eq}}$	3414	$3427 \pm 51$
$c_{217}$	0.99736	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0165	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8106	$0.8082 \pm 0.0094$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.409$	$\Omega_\Lambda$	0.7223	$0.726 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07231	$0.07226 \pm 0.00057$
$A^{\text{kSZ}}$	2.29	$5.32^{+2.8}_{-1.9}$	$\Omega_m$	0.2777	$0.274 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10510.93$ ; R-1 = 0.01440

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.93 DR7: 0.00 6DF: 0.70 CMB - lowLike: 2014.75 lowl: -6.00 CamSpec: 7807.19 highL: 692.40 Hubble - HST: 0.84

## 18.24 base\_w\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022054	$0.02208 \pm 0.00028$	$r_{143 \times 217}^{\text{PS}}$	0.886	$> 0.852$	$\Omega_m h^3$	0.10176	$0.1016 \pm 0.0031$
$\Omega_c h^2$	0.11972	$0.1196 \pm 0.0026$	$r_{143 \times 217}^{\text{CIB}}$	0.584	$0.42 \pm 0.22$	$Y_{\text{P}}$	0.247704	$0.24771 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04129	$1.04134 \pm 0.00063$	$\gamma^{\text{CIB}}$	0.511	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8344	$1.835 \pm 0.013$
$\tau$	0.0820	$0.090^{+0.013}_{-0.014}$	$c_{100}$	1.000587	$1.00059 \pm 0.00040$	Age/Gyr	13.738	$13.738 \pm 0.054$
$w$	-1.136	$-1.133 \pm 0.070$	$c_{217}$	0.99630	$0.9964 \pm 0.0014$	$z_*$	1090.40	$1090.37 \pm 0.52$
$n_s$	0.9599	$0.9610 \pm 0.0072$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	144.74	$144.75 \pm 0.58$
$\ln(10^{10} A_s)$	3.0733	$3.089 \pm 0.025$	$A^{\text{kSZ}}$	0.00	$< 6.12$	$100\theta_*$	1.04145	$1.04150 \pm 0.00062$
$\alpha_{\text{SNLS}}$	1.423	$1.43 \pm 0.11$	$\beta_1^1$	0.54	$0.52 \pm 0.56$	$z_{\text{drag}}$	1059.25	$1059.30 \pm 0.57$
$\beta_{\text{SNLS}}$	3.257	$3.26 \pm 0.11$	$\Omega_{\Lambda}$	0.7211	$0.720^{+0.020}_{-0.018}$	$r_{\text{drag}}$	147.51	$147.51 \pm 0.58$
$A_{100}^{\text{PS}}$	143	$169 \pm 60$	$\Omega_m$	0.2789	$0.280 \pm 0.019$	$k_{\text{D}}$	0.14008	$0.14009 \pm 0.00062$
$A_{143}^{\text{PS}}$	45.3	$53 \pm 10$	$\sigma_8$	0.8606	$0.866 \pm 0.025$	$100\theta_{\text{D}}$	0.161378	$0.16136 \pm 0.00033$
$A_{217}^{\text{PS}}$	110.3	$107^{+20}_{-20}$	$z_{\text{re}}$	10.40	$11.1 \pm 1.1$	$z_{\text{eq}}$	3388	$3386 \pm 58$
$A_{143}^{\text{CIB}}$	7.39	$< 10.5$	$H_0$	71.45	$71.4 \pm 2.1$	$100\theta_{\text{eq}}$	0.8153	$0.816 \pm 0.011$
$A_{217}^{\text{CIB}}$	31.2	$29^{+6}_{-9}$	$10^9 A_s$	2.161	$2.197^{+0.052}_{-0.059}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07250	$0.07250 \pm 0.00092$
$A_{143}^{\text{tSZ}}$	10.0	—	$\Omega_m h^2$	0.14242	$0.1423 \pm 0.0024$			

Best-fit  $\chi_{\text{eff}}^2 = 10226.73$ ; R-1 = 0.00994

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.47 lowl: -7.30 CamSpec: 7797.54 SN - SNLS: 421.13

## 18.25 base\_w\_planck\_lowl\_lowLike\_SNLS\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022296	$0.02220 \pm 0.00027$	$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.846$	$\Omega_m h^3$	0.10120	$0.1012 \pm 0.0030$
$\Omega_c h^2$	0.11761	$0.1181 \pm 0.0021$	$r_{143 \times 217}^{\text{CIB}}$	0.266	$0.43 \pm 0.22$	$Y_P$	0.247808	$0.24777 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04158	$1.04150 \pm 0.00060$	$\gamma^{\text{CIB}}$	0.527	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8294	$1.828 \pm 0.010$
$\tau$	0.0949	$0.089 \pm 0.013$	$c_{100}$	1.000589	$1.00059 \pm 0.00040$	Age/Gyr	13.705	$13.719 \pm 0.054$
$w$	-1.115	$-1.118 \pm 0.066$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	$z_*$	1089.904	$1090.07 \pm 0.47$
$n_s$	0.9684	$0.9643 \pm 0.0067$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	145.099	$145.04 \pm 0.48$
$\ln(10^{10} A_s)$	3.0965	$3.085 \pm 0.024$	$A^{\text{kSZ}}$	0.0	—	$100\theta_*$	1.04172	$1.04164 \pm 0.00060$
$\alpha_{\text{SNLS}}$	1.426	$1.43^{+0.10}_{-0.12}$	$\beta_1^1$	0.59	$0.48 \pm 0.56$	$z_{\text{drag}}$	1059.67	$1059.49 \pm 0.57$
$\beta_{\text{SNLS}}$	3.255	$3.26 \pm 0.11$	$\Omega_\Lambda$	0.7289	$0.726^{+0.020}_{-0.017}$	$r_{\text{drag}}$	147.802	$147.77 \pm 0.49$
$A_{100}^{\text{PS}}$	138	$167 \pm 60$	$\Omega_m$	0.2711	$0.274^{+0.017}_{-0.020}$	$k_D$	0.13996	$0.13992 \pm 0.00056$
$A_{143}^{\text{PS}}$	54.6	$51 \pm 10$	$\sigma_8$	0.8603	$0.856 \pm 0.021$	$100\theta_D$	0.161149	$0.16126 \pm 0.00033$
$A_{217}^{\text{PS}}$	118.7	$104^{+20}_{-20}$	$z_{\text{re}}$	11.41	$10.9 \pm 1.1$	$z_{\text{eq}}$	3343.0	$3353 \pm 48$
$A_{143}^{\text{CIB}}$	2.59	$< 10.9$	$H_0$	72.00	$71.8 \pm 2.2$	$100\theta_{\text{eq}}$	0.8243	$0.8222 \pm 0.0092$
$A_{217}^{\text{CIB}}$	25.4	$29^{+6}_{-9}$	$10^9 A_s$	2.212	$2.187^{+0.050}_{-0.055}$	$r_{\text{drag}}/D_V(0.57)$	0.07317	$0.07297 \pm 0.00085$
$A_{143}^{\text{tSZ}}$	7.56	—	$\Omega_m h^2$	0.14055	$0.1410 \pm 0.0020$			

Best-fit  $\chi_{\text{eff}}^2 = 10235.92$ ; R-1 = 0.01253

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.44 lensing: 9.44 lowl: -8.04 CamSpec: 7798.40 SN - SNLS: 420.92



## 18.26 base\_w\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022078	$0.02201 \pm 0.00025$	$r_{143 \times 217}^{\text{PS}}$	0.909	$> 0.852$	$\Omega_m h^3$	0.10121	$0.1011 \pm 0.0028$
$\Omega_c h^2$	0.12036	$0.1205 \pm 0.0021$	$r_{143 \times 217}^{\text{CIB}}$	0.577	$0.42 \pm 0.23$	$Y_{\text{P}}$	0.247715	$0.24769 \pm 0.00011$
$100\theta_{\text{MC}}$	1.04130	$1.04121 \pm 0.00059$	$\gamma^{\text{CIB}}$	0.538	$0.53 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8418	$1.839 \pm 0.011$
$\tau$	0.0935	$0.088^{+0.012}_{-0.014}$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	Age/Gyr	13.7472	$13.758 \pm 0.040$
$w$	-1.121	$-1.123^{+0.073}_{-0.064}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	$z_*$	1090.426	$1090.53 \pm 0.44$
$n_s$	0.9626	$0.9589 \pm 0.0063$	$\xi^{\text{tSZ-CIB}}$	0.19	—	$r_*$	144.549	$144.56 \pm 0.49$
$\ln(10^{10} A_s)$	3.1004	$3.088 \pm 0.025$	$A^{\text{kSZ}}$	0.51	$< 6.13$	$100\theta_*$	1.04145	$1.04137 \pm 0.00058$
$\alpha_{\text{SNLS}}$	1.421	$1.43^{+0.10}_{-0.12}$	$\beta_1^1$	0.70	$0.55 \pm 0.56$	$z_{\text{drag}}$	1059.36	$1059.21 \pm 0.55$
$\beta_{\text{SNLS}}$	3.255	$3.26 \pm 0.11$	$\Omega_{\Lambda}$	0.7140	$0.712 \pm 0.013$	$r_{\text{drag}}$	147.312	$147.35 \pm 0.50$
$A_{100}^{\text{PS}}$	153	$170 \pm 60$	$\Omega_m$	0.2860	$0.288 \pm 0.013$	$k_{\text{D}}$	0.14030	$0.14021 \pm 0.00058$
$A_{143}^{\text{PS}}$	65.4	$54 \pm 10$	$\sigma_8$	0.8708	$0.865 \pm 0.025$	$100\theta_{\text{D}}$	0.161325	$0.16141 \pm 0.00032$
$A_{217}^{\text{PS}}$	123.1	$107^{+20}_{-10}$	$z_{\text{re}}$	11.43	$11.0 \pm 1.1$	$z_{\text{eq}}$	3403.7	$3406 \pm 47$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	70.73	$70.6 \pm 1.6$	$100\theta_{\text{eq}}$	0.8125	$0.8120 \pm 0.0088$
$A_{217}^{\text{CIB}}$	24.1	$29^{+6}_{-9}$	$10^9 A_s$	2.221	$2.194^{+0.051}_{-0.058}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07218	$0.07209 \pm 0.00058$
$A_{143}^{\text{tSZ}}$	6.03	—	$\Omega_m h^2$	0.14309	$0.1432 \pm 0.0020$			

Best-fit  $\chi_{\text{eff}}^2 = 10227.45$ ; R-1 = 0.01366

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.08 6DF: 0.41 DR9: 0.73 CMB - lowLike: 2014.59 lowl: -7.08 CamSpec: 7796.89 SN - SNLS: 421.18

## 18.27 base\_w\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022231	$0.02212 \pm 0.00027$	$r_{143 \times 217}^{\text{PS}}$	0.957	$> 0.851$	$\Omega_m h^3$	0.10196	$0.1030 \pm 0.0026$
$\Omega_c h^2$	0.11834	$0.1192 \pm 0.0025$	$r_{143 \times 217}^{\text{CIB}}$	0.644	$0.42 \pm 0.22$	$Y_{\text{P}}$	0.247780	$0.24773 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04155	$1.04142 \pm 0.00062$	$\gamma^{\text{CIB}}$	0.536	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8339	$1.833 \pm 0.012$
$\tau$	0.0965	$0.091 \pm 0.013$	$c_{100}$	1.000580	$1.00059 \pm 0.00040$	Age/Gyr	13.7066	$13.713 \pm 0.045$
$w$	-1.133	$-1.162 \pm 0.061$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	$z_*$	1090.05	$1090.28 \pm 0.51$
$n_s$	0.9679	$0.9620 \pm 0.0071$	$\xi^{\text{tSZ-CIB}}$	0.63	—	$r_*$	144.96	$144.83 \pm 0.57$
$\ln(10^{10} A_s)$	3.1021	$3.090 \pm 0.025$	$A^{\text{kSZ}}$	0.00	$< 6.05$	$100\theta_*$	1.04168	$1.04157 \pm 0.00061$
$\alpha_{\text{SNLS}}$	1.420	$1.43 \pm 0.11$	$\beta_1^1$	0.66	$0.51 \pm 0.56$	$z_{\text{drag}}$	1059.59	$1059.36 \pm 0.57$
$\beta_{\text{SNLS}}$	3.257	$3.27 \pm 0.11$	$\Omega_{\Lambda}$	0.7291	$0.730^{+0.015}_{-0.014}$	$r_{\text{drag}}$	147.68	$147.58 \pm 0.57$
$A_{100}^{\text{PS}}$	163	$169 \pm 60$	$\Omega_m$	0.2709	$0.270^{+0.014}_{-0.015}$	$k_{\text{D}}$	0.14004	$0.14005 \pm 0.00062$
$A_{143}^{\text{PS}}$	68.0	$53 \pm 10$	$\sigma_8$	0.8700	$0.874 \pm 0.023$	$100\theta_{\text{D}}$	0.161210	$0.16133 \pm 0.00033$
$A_{217}^{\text{PS}}$	124.0	$107^{+20}_{-20}$	$z_{\text{re}}$	11.58	$11.1 \pm 1.1$	$z_{\text{eq}}$	3359	$3377 \pm 57$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	72.20	$72.6 \pm 1.7$	$100\theta_{\text{eq}}$	0.8212	$0.818 \pm 0.011$
$A_{217}^{\text{CIB}}$	23.3	$29^{+6}_{-9}$	$10^9 A_s$	2.224	$2.199^{+0.053}_{-0.060}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07303	$0.07287 \pm 0.00083$
$A_{143}^{\text{tSZ}}$	4.63	—	$\Omega_m h^2$	0.14122	$0.1420 \pm 0.0024$			

Best-fit  $\chi_{\text{eff}}^2 = 10227.15$ ; R-1 = 0.01182

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.65 lowl: -7.91 CamSpec: 7798.06 Hubble - HST: 0.60 SN - SNLS: 421.08

## 18.28 base\_w\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022105	$0.02204 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.000	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09992	$0.0999 \pm 0.0037$
$\Omega_c h^2$	0.11998	$0.1201 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.541	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247726	$0.24770 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04131	$1.04127 \pm 0.00063$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8409	$1.837 \pm 0.013$
$\tau$	0.0929	$0.089^{+0.013}_{-0.014}$	$c_{217}$	0.99643	$0.9964 \pm 0.0014$	Age/Gyr	13.758	$13.768 \pm 0.061$
$w$	-1.091	$-1.093 \pm 0.085$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1090.36	$1090.45 \pm 0.53$
$n_s$	0.9638	$0.9600 \pm 0.0072$	$A^{\text{kSZ}}$	0.00	$< 6.11$	$r_*$	144.63	$144.66 \pm 0.59$
$\ln(10^{10} A_s)$	3.0986	$3.089 \pm 0.025$	$\beta_1^1$	0.72	$0.55 \pm 0.57$	$100\theta_*$	1.04147	$1.04143 \pm 0.00062$
$A_{100}^{\text{PS}}$	149	$171 \pm 60$	$\Omega_\Lambda$	0.7088	$0.707^{+0.026}_{-0.021}$	$z_{\text{drag}}$	1059.40	$1059.25 \pm 0.57$
$A_{143}^{\text{PS}}$	61.7	$54 \pm 10$	$\Omega_m$	0.2912	$0.293^{+0.021}_{-0.026}$	$r_{\text{drag}}$	147.38	$147.44 \pm 0.59$
$A_{217}^{\text{PS}}$	123.9	$107^{+20}_{-10}$	$\sigma_8$	0.8604	$0.855 \pm 0.029$	$k_D$	0.14025	$0.14014 \pm 0.00063$
$A_{143}^{\text{CIB}}$	1.31	$< 10.4$	$z_{\text{re}}$	11.36	$11.0 \pm 1.1$	$100\theta_D$	0.161300	$0.16139 \pm 0.00034$
$A_{217}^{\text{CIB}}$	24.0	$29^{+6}_{-9}$	$H_0$	70.01	$70.0 \pm 2.5$	$z_{\text{eq}}$	3395	$3396 \pm 59$
$A_{143}^{\text{tSZ}}$	6.22	—	$10^9 A_s$	2.217	$2.196^{+0.052}_{-0.060}$	$100\theta_{\text{eq}}$	0.8141	$0.814 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.853$	$\Omega_m h^2$	0.14273	$0.1428 \pm 0.0025$	$r_{\text{drag}}/D_V(0.57)$	0.07211	$0.07204 \pm 0.00097$

Best-fit  $\chi^2_{\text{eff}} = 9934.89$ ; R-1 = 0.00969

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.49 lowl: -7.28 CamSpec: 7797.18 SN - Union2.1: 129.86

## 18.29 base\_w\_planck\_lowl\_lowLike\_Union2\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022260	$0.02214 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.570	$0.43 \pm 0.22$	$\Omega_m h^3$	0.09825	$0.0993 \pm 0.0036$
$\Omega_c h^2$	0.11811	$0.1185 \pm 0.0021$	$\gamma^{\text{CIB}}$	0.565	$0.53 \pm 0.12$	$Y_P$	0.247793	$0.24774 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04152	$1.04141 \pm 0.00060$	$c_{100}$	1.000592	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8328	$1.829 \pm 0.010$
$\tau$	0.0940	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99629	$0.9964 \pm 0.0014$	Age/Gyr	13.751	$13.754 \pm 0.061$
$w$	-1.049	$-1.079 \pm 0.080$	$\xi^{\text{tSZ-CIB}}$	0.33	—	$z_*$	1089.995	$1090.19 \pm 0.47$
$n_s$	0.9674	$0.9628 \pm 0.0067$	$A^{\text{kSZ}}$	0.99	—	$r_*$	144.995	$144.98 \pm 0.49$
$\ln(10^{10} A_s)$	3.0965	$3.084 \pm 0.024$	$\beta_1^1$	0.65	$0.50 \pm 0.56$	$100\theta_*$	1.04165	$1.04156 \pm 0.00059$
$A_{100}^{\text{PS}}$	144	$171 \pm 60$	$\Omega_\Lambda$	0.7095	$0.713^{+0.025}_{-0.020}$	$z_{\text{drag}}$	1059.63	$1059.37 \pm 0.57$
$A_{143}^{\text{PS}}$	60.9	$53 \pm 10$	$\Omega_m$	0.2905	$0.287^{+0.020}_{-0.025}$	$r_{\text{drag}}$	147.707	$147.74 \pm 0.49$
$A_{217}^{\text{PS}}$	119.6	$106^{+20}_{-20}$	$\sigma_8$	0.8426	$0.845 \pm 0.025$	$k_D$	0.14003	$0.13991 \pm 0.00056$
$A_{143}^{\text{CIB}}$	0.0	$< 10.8$	$z_{\text{re}}$	11.36	$10.9 \pm 1.1$	$100\theta_D$	0.161172	$0.16132 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.3	$29^{+6}_{-9}$	$H_0$	69.68	$70.3 \pm 2.6$	$z_{\text{eq}}$	3354.1	$3361 \pm 48$
$A_{143}^{\text{tSZ}}$	6.31	—	$10^9 A_s$	2.212	$2.185^{+0.049}_{-0.057}$	$100\theta_{\text{eq}}$	0.8221	$0.8206 \pm 0.0093$
$r_{143 \times 217}^{\text{PS}}$	0.952	$> 0.850$	$\Omega_m h^2$	0.14101	$0.1413 \pm 0.0020$	$r_{\text{drag}}/D_V(0.57)$	0.07247	$0.07250 \pm 0.00092$

Best-fit  $\chi^2_{\text{eff}} = 9945.37$ ; R-1 = 0.01337

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.39 lensing: 9.73 lowl: -7.75 CamSpec: 7798.71 SN - Union2.1: 129.83

### 18.30 base\_w\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022156	$0.02202 \pm 0.00026$	$r_{143 \times 217}^{\text{CIB}}$	0.470	$0.42 \pm 0.22$	$\Omega_m h^3$	0.09774	$0.0999 \pm 0.0032$
$\Omega_c h^2$	0.11922	$0.1203 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.552	$0.53 \pm 0.12$	$Y_P$	0.247748	$0.24769 \pm 0.00011$
$100\theta_{\text{MC}}$	1.04143	$1.04123 \pm 0.00060$	$c_{100}$	1.000592	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8378	$1.838 \pm 0.011$
$\tau$	0.0930	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	Age/Gyr	13.7760	$13.771 \pm 0.042$
$w$	-1.039	$-1.095 \pm 0.075$	$\xi^{\text{tSZ-CIB}}$	0.44	—	$z_*$	1090.224	$1090.50 \pm 0.46$
$n_s$	0.9655	$0.9594 \pm 0.0063$	$A^{\text{kSZ}}$	0.1	—	$r_*$	144.79	$144.61 \pm 0.51$
$\ln(10^{10} A_s)$	3.0972	$3.088 \pm 0.025$	$\beta_1^1$	0.72	$0.55 \pm 0.57$	$100\theta_*$	1.04157	$1.04140 \pm 0.00059$
$A_{100}^{\text{PS}}$	159	$172 \pm 60$	$\Omega_\Lambda$	0.7001	$0.706 \pm 0.014$	$z_{\text{drag}}$	1059.47	$1059.23 \pm 0.56$
$A_{143}^{\text{PS}}$	67.1	$54 \pm 10$	$\Omega_m$	0.2999	$0.294 \pm 0.014$	$r_{\text{drag}}$	147.53	$147.39 \pm 0.52$
$A_{217}^{\text{PS}}$	123.5	$107^{+20}_{-20}$	$\sigma_8$	0.8428	$0.856 \pm 0.027$	$k_D$	0.14014	$0.14018 \pm 0.00060$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$z_{\text{re}}$	11.34	$11.0 \pm 1.1$	$100\theta_D$	0.161270	$0.16140 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.0	$29^{+6}_{-9}$	$H_0$	68.82	$69.9 \pm 1.7$	$z_{\text{eq}}$	3378.3	$3401 \pm 50$
$A^{\text{tSZ}}_{143}$	5.32	—	$10^9 A_s$	2.214	$2.194^{+0.052}_{-0.059}$	$100\theta_{\text{eq}}$	0.8174	$0.8129 \pm 0.0093$
$r_{143 \times 217}^{\text{PS}}$	0.946	$> 0.852$	$\Omega_m h^2$	0.14203	$0.1430 \pm 0.0021$	$r_{\text{drag}}/D_V(0.57)$	0.07200	$0.07196 \pm 0.00058$

Best-fit  $\chi^2_{\text{eff}} = 9936.60$ ; R-1 = 0.00877

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.56 6DF: 0.09 DR9: 0.48 CMB - lowLike: 2014.42 lowl: -7.47 CamSpec: 7798.05 SN - Union2.1: 129.92

### 18.31 base\_w\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022165	$0.02210 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.569	$0.42 \pm 0.22$	$\Omega_m h^3$	0.10221	$0.1025 \pm 0.0029$
$\Omega_c h^2$	0.11937	$0.1196 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.538	$0.53 \pm 0.12$	$Y_P$	0.247752	$0.24772 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04141	$1.04137 \pm 0.00063$	$c_{100}$	1.000598	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8376	$1.834 \pm 0.013$
$\tau$	0.0942	$0.090^{+0.013}_{-0.014}$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	Age/Gyr	13.7190	$13.724 \pm 0.047$
$w$	-1.141	$-1.152 \pm 0.067$	$\xi^{\text{tSZ-CIB}}$	0.13	—	$z_*$	1090.22	$1090.33 \pm 0.51$
$n_s$	0.9647	$0.9613 \pm 0.0071$	$A^{\text{kSZ}}$	0.45	$< 6.12$	$r_*$	144.74	$144.75 \pm 0.58$
$\ln(10^{10} A_s)$	3.0994	$3.089 \pm 0.025$	$\beta_1^1$	0.68	$0.53 \pm 0.56$	$100\theta_*$	1.04156	$1.04153 \pm 0.00062$
$A_{100}^{\text{PS}}$	143	$170 \pm 60$	$\Omega_\Lambda$	0.7249	$0.725^{+0.017}_{-0.014}$	$z_{\text{drag}}$	1059.47	$1059.35 \pm 0.56$
$A_{143}^{\text{PS}}$	62.6	$53 \pm 10$	$\Omega_m$	0.2751	$0.275^{+0.014}_{-0.017}$	$r_{\text{drag}}$	147.48	$147.51 \pm 0.58$
$A_{217}^{\text{PS}}$	123.2	$107^{+20}_{-20}$	$\sigma_8$	0.8734	$0.871 \pm 0.025$	$k_D$	0.14020	$0.14011 \pm 0.00063$
$A_{143}^{\text{CIB}}$	0.0	$< 10.4$	$z_{\text{re}}$	11.43	$11.1 \pm 1.1$	$100\theta_D$	0.161250	$0.16134 \pm 0.00033$
$A_{217}^{\text{CIB}}$	23.8	$29^{+6}_{-9}$	$H_0$	71.89	$72.1 \pm 1.8$	$z_{\text{eq}}$	3382	$3385 \pm 58$
$A_{143}^{\text{tSZ}}$	6.76	—	$10^9 A_s$	2.219	$2.197^{+0.053}_{-0.060}$	$100\theta_{\text{eq}}$	0.8167	$0.816 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.911	$> 0.852$	$\Omega_m h^2$	0.14218	$0.1423 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07269	$0.07267 \pm 0.00083$

Best-fit  $\chi^2_{\text{eff}} = 9936.26$ ; R-1 = 0.01366

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.55 lowl: -7.51 CamSpec: 7797.14 Hubble - HST: 0.82 SN - Union2.1: 130.61

### 18.32 base\_w\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022185	$0.02206 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.497	$0.42 \pm 0.22$	$\Omega_m h^3$	0.10342	$0.1064 \pm 0.0041$
$\Omega_c h^2$	0.11894	$0.1200 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.552	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247760	$0.24771 \pm 0.00012$
$100\theta_{\text{MC}}$	1.04147	$1.04131 \pm 0.00063$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8355	$1.837 \pm 0.013$
$\tau$	0.0941	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99650	$0.9964 \pm 0.0014$	Age/Gyr	13.699	$13.691 \pm 0.051$
$w$	-1.167	$-1.240 \pm 0.096$	$\xi^{\text{tSZ-CIB}}$	0.27	—	$z_*$	1090.16	$1090.42 \pm 0.52$
$n_s$	0.9655	$0.9600 \pm 0.0072$	$A^{\text{kSZ}}$	1.38	$< 6.12$	$r_*$	144.84	$144.66 \pm 0.58$
$\ln(10^{10} A_s)$	3.0981	$3.089^{+0.023}_{-0.027}$	$\beta_1^1$	0.66	$0.53 \pm 0.56$	$100\theta_*$	1.04161	$1.04147 \pm 0.00062$
$A_{100}^{\text{PS}}$	151	$169 \pm 60$	$\Omega_\Lambda$	0.7336	$0.742^{+0.021}_{-0.016}$	$z_{\text{drag}}$	1059.51	$1059.29 \pm 0.57$
$A_{143}^{\text{PS}}$	63.9	$53 \pm 10$	$\Omega_m$	0.2664	$0.258^{+0.016}_{-0.020}$	$r_{\text{drag}}$	147.57	$147.43 \pm 0.58$
$A_{217}^{\text{PS}}$	119.6	$107^{+20}_{-10}$	$\sigma_8$	0.8793	$0.897 \pm 0.031$	$k_D$	0.14012	$0.14016 \pm 0.00062$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$z_{\text{re}}$	11.40	$11.0 \pm 1.1$	$100\theta_D$	0.161245	$0.16137 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.5	$29^{+6}_{-9}$	$H_0$	72.95	$74.5 \pm 2.6$	$z_{\text{eq}}$	3372	$3395 \pm 58$
$A_{143}^{\text{tSZ}}$	5.79	—	$10^9 A_s$	2.216	$2.195^{+0.050}_{-0.060}$	$100\theta_{\text{eq}}$	0.8186	$0.814 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.924	$> 0.854$	$\Omega_m h^2$	0.14177	$0.1427 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07304	$0.07303 \pm 0.00088$

Best-fit  $\chi^2_{\text{eff}} = 9805.21$ ; R-1 = 0.01099

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.54 lowl: -7.70 CamSpec: 7797.58 Hubble - HST: 0.24

### 18.33 base\_w\_planck\_lowl\_lowLike\_HST\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022344	$0.02216 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.431	$0.43 \pm 0.22$	$\Omega_m h^3$	0.10209	$0.1052 \pm 0.0038$
$\Omega_c h^2$	0.11729	$0.1183 \pm 0.0021$	$\gamma^{\text{CIB}}$	0.571	$0.53^{+0.13}_{-0.12}$	$Y_P$	0.247829	$0.24775 \pm 0.00011$
$100\theta_{\text{MC}}$	1.04169	$1.04148 \pm 0.00060$	$c_{100}$	1.000584	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8297	$1.829 \pm 0.010$
$\tau$	0.0946	$0.088^{+0.012}_{-0.014}$	$c_{217}$	0.99641	$0.9964 \pm 0.0014$	Age/Gyr	13.686	$13.679 \pm 0.052$
$w$	-1.131	$-1.208 \pm 0.085$	$\xi^{\text{tSZ-CIB}}$	0.33	—	$z_*$	1089.814	$1090.14 \pm 0.46$
$n_s$	0.9696	$0.9632 \pm 0.0065$	$A^{\text{kSZ}}$	0.6	—	$r_*$	145.146	$145.03 \pm 0.48$
$\ln(10^{10} A_s)$	3.0960	$3.083^{+0.022}_{-0.025}$	$\beta_1^1$	0.66	$0.47 \pm 0.56$	$100\theta_*$	1.04182	$1.04163 \pm 0.00059$
$A_{100}^{\text{PS}}$	153	$169 \pm 60$	$\Omega_\Lambda$	0.7351	$0.745^{+0.020}_{-0.016}$	$z_{\text{drag}}$	1059.74	$1059.40 \pm 0.56$
$A_{143}^{\text{PS}}$	62.9	$52 \pm 10$	$\Omega_m$	0.2649	$0.255^{+0.016}_{-0.020}$	$r_{\text{drag}}$	147.835	$147.78 \pm 0.49$
$A_{217}^{\text{PS}}$	118.1	$105^{+20}_{-20}$	$\sigma_8$	0.8643	$0.881 \pm 0.026$	$k_D$	0.13996	$0.13988 \pm 0.00056$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$z_{\text{re}}$	11.36	$10.9 \pm 1.1$	$100\theta_D$	0.161109	$0.16131 \pm 0.00032$
$A_{217}^{\text{CIB}}$	25.1	$29^{+6}_{-9}$	$H_0$	72.78	$74.5 \pm 2.5$	$z_{\text{eq}}$	3336.5	$3356 \pm 47$
$A^{\text{tSZ}}_{143}$	5.68	—	$10^9 A_s$	2.211	$2.182^{+0.047}_{-0.054}$	$100\theta_{\text{eq}}$	0.8258	$0.8216 \pm 0.0091$
$r_{143 \times 217}^{\text{PS}}$	0.942	$> 0.849$	$\Omega_m h^2$	0.14028	$0.1411 \pm 0.0020$	$r_{\text{drag}}/D_V(0.57)$	0.07344	$0.07351 \pm 0.00080$

Best-fit  $\chi^2_{\text{eff}} = 9815.55$ ; R-1 = 0.01367

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.40 lensing: 9.30 lowl: -8.21 CamSpec: 7799.35 Hubble - HST: 0.29



### 18.34 base\_w\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022146	$0.02196 \pm 0.00026$	$r_{143 \times 217}^{\text{CIB}}$	0.457	$0.41 \pm 0.22$	$\Omega_m h^3$	0.10220	$0.1045 \pm 0.0038$
$\Omega_c h^2$	0.11992	$0.1215 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.556	$0.54 \pm 0.12$	$Y_P$	0.247744	$0.24766 \pm 0.00011$
$100\theta_{\text{MC}}$	1.04136	$1.04111 \pm 0.00059$	$c_{100}$	1.000590	$1.00057 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8397	$1.843 \pm 0.012$
$\tau$	0.0927	$0.087^{+0.012}_{-0.014}$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	Age/Gyr	13.7258	$13.733 \pm 0.040$
$w$	-1.141	$-1.21^{+0.10}_{-0.087}$	$\xi^{\text{tSZ-CIB}}$	0.16	—	$z_*$	1090.299	$1090.69 \pm 0.47$
$n_s$	0.9631	$0.9567 \pm 0.0065$	$A^{\text{kSZ}}$	1.30	$< 6.20$	$r_*$	144.61	$144.35 \pm 0.51$
$\ln(10^{10} A_s)$	3.0977	$3.087 \pm 0.024$	$\beta_1^1$	0.68	$0.57 \pm 0.56$	$100\theta_*$	1.04150	$1.04128 \pm 0.00059$
$A_{100}^{\text{PS}}$	147	$171 \pm 60$	$\Omega_\Lambda$	0.7217	$0.725 \pm 0.014$	$z_{\text{drag}}$	1059.47	$1059.16 \pm 0.56$
$A_{143}^{\text{PS}}$	62.2	$54 \pm 10$	$\Omega_m$	0.2783	$0.275 \pm 0.014$	$r_{\text{drag}}$	147.35	$147.15 \pm 0.52$
$A_{217}^{\text{PS}}$	119.8	$107^{+20}_{-10}$	$\sigma_8$	0.8739	$0.890 \pm 0.031$	$k_D$	0.14032	$0.14038 \pm 0.00059$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$z_{\text{re}}$	11.33	$10.9 \pm 1.1$	$100\theta_D$	0.161251	$0.16144 \pm 0.00033$
$A_{217}^{\text{CIB}}$	24.8	$29^{+6}_{-9}$	$H_0$	71.61	$72.5 \pm 2.0$	$z_{\text{eq}}$	3395	$3428 \pm 51$
$A^{\text{tSZ}}_{143}$	6.40	—	$10^9 A_s$	2.215	$2.193^{+0.050}_{-0.058}$	$100\theta_{\text{eq}}$	0.8143	$0.8078 \pm 0.0094$
$r_{143 \times 217}^{\text{PS}}$	0.917	$> 0.855$	$\Omega_m h^2$	0.14271	$0.1441 \pm 0.0021$	$r_{\text{drag}}/D_V(0.57)$	0.07249	$0.07222 \pm 0.00058$

Best-fit  $\chi^2_{\text{eff}} = 9807.82$ ; R-1 = 0.01506

$\chi^2_{\text{eff}}$ : BAO - DR9: 1.24 DR7: 0.01 6DF: 0.65 CMB - lowLike: 2014.51 lowl: -7.27 CamSpec: 7797.14 Hubble - HST: 1.03

## 19 w+wa

### 19.1 base\_w\_wa\_planck\_lowl\_lowLike\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022035	$0.02198 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.337	$0.42 \pm 0.22$	$Y_P$	0.247696	$0.24767 \pm 0.00011$
$\Omega_c h^2$	0.12074	$0.1211 \pm 0.0024$	$\gamma^{\text{CIB}}$	0.555	$0.54^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8435	$1.841 \pm 0.012$
$100\theta_{\text{MC}}$	1.04118	$1.04113 \pm 0.00061$	$c_{100}$	1.000582	$1.00058 \pm 0.00040$	Age/Gyr	13.758	$13.760 \pm 0.051$
$\tau$	0.0923	$0.087^{+0.012}_{-0.014}$	$c_{217}$	0.99650	$0.9964 \pm 0.0014$	$z_*$	1090.514	$1090.63 \pm 0.49$
$w$	-1.007	$-1.04^{+0.47}_{-0.33}$	$\xi^{\text{tSZ-CIB}}$	0.18	—	$r_*$	144.49	$144.45 \pm 0.55$
$w_a$	-0.29	$-0.30^{+0.88}_{-1.3}$	$A^{\text{kSZ}}$	0.0	—	$100\theta_*$	1.04134	$1.04130 \pm 0.00060$
$n_s$	0.9617	$0.9577 \pm 0.0069$	$\beta_1^1$	0.68	$0.56 \pm 0.56$	$z_{\text{drag}}$	1059.28	$1059.17 \pm 0.56$
$\ln(10^{10} A_s)$	3.0989	$3.087^{+0.023}_{-0.026}$	$\Omega_\Lambda$	0.7011	$0.705 \pm 0.036$	$r_{\text{drag}}$	147.26	$147.25 \pm 0.55$
$A_{100}^{\text{PS}}$	151	$171 \pm 60$	$\Omega_m$	0.2989	$0.295 \pm 0.036$	$k_D$	0.14032	$0.14029 \pm 0.00061$
$A_{143}^{\text{PS}}$	66.9	$54 \pm 10$	$\sigma_8$	0.8608	$0.864^{+0.041}_{-0.053}$	$100\theta_D$	0.161358	$0.16143 \pm 0.00033$
$A_{217}^{\text{PS}}$	122.3	$107^{+20}_{-20}$	$z_{\text{re}}$	11.34	$10.9 \pm 1.1$	$z_{\text{eq}}$	3412	$3418 \pm 55$
$A_{143}^{\text{CIB}}$	0.0	$< 10.6$	$H_0$	69.27	$70.2^{+3.6}_{-5.5}$	$100\theta_{\text{eq}}$	0.8109	$0.810 \pm 0.010$
$A_{217}^{\text{CIB}}$	25.0	$29^{+6}_{-9}$	$10^9 A_s$	2.217	$2.192^{+0.050}_{-0.058}$	$r_{\text{drag}}/D_V(0.57)$	0.07213	$0.07210 \pm 0.00074$
$A_{143}^{\text{tSZ}}$	5.89	—	$\Omega_m h^2$	0.14342	$0.1437 \pm 0.0023$			
$r_{143 \times 217}^{\text{PS}}$	0.914	$> 0.853$	$\Omega_m h^3$	0.0993	$0.1009^{+0.0057}_{-0.0084}$			

Best-fit  $\chi_{\text{eff}}^2 = 9806.18$ ; R-1 = 0.00683

$\chi_{\text{eff}}^2$ : BAO - DR9: 0.65 DR7: 0.24 6DF: 0.19 CMB - lowLike: 2014.51 lowl: -6.91 CamSpec: 7796.98

## 19.2 base\_w\_wa\_planck\_lowl\_lowLike\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022217	$0.02207 \pm 0.00026$	$r_{143 \times 217}^{\text{CIB}}$	0.787	$0.43 \pm 0.22$	$Y_P$	0.247774	$0.24771 \pm 0.00011$
$\Omega_c h^2$	0.11847	$0.1194 \pm 0.0019$	$\gamma^{\text{CIB}}$	0.555	$0.54 \pm 0.12$	$10^9 A_s e^{-2\tau}$	1.8338	$1.8328 \pm 0.0097$
$100\theta_{\text{MC}}$	1.04138	$1.04127 \pm 0.00059$	$c_{100}$	1.000586	$1.00059 \pm 0.00040$	Age/Gyr	13.769	$13.769^{+0.049}_{-0.055}$
$\tau$	0.0940	$0.086^{+0.012}_{-0.013}$	$c_{217}$	0.99645	$0.9964 \pm 0.0014$	$z_*$	1090.080	$1090.35 \pm 0.44$
$w$	-0.986	$-1.05^{+0.47}_{-0.36}$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$r_*$	144.935	$144.81 \pm 0.45$
$w_a$	-0.12	$-0.13 \pm 0.93$	$A^{\text{kSZ}}$	0.6	—	$100\theta_*$	1.04153	$1.04142 \pm 0.00059$
$n_s$	0.9666	$0.9608 \pm 0.0064$	$\beta_1^1$	0.63	$0.50 \pm 0.56$	$z_{\text{drag}}$	1059.55	$1059.28 \pm 0.55$
$\ln(10^{10} A_s)$	3.0969	$3.081^{+0.022}_{-0.024}$	$\Omega_\Lambda$	0.6989	$0.705 \pm 0.036$	$r_{\text{drag}}$	147.660	$147.58 \pm 0.46$
$A_{100}^{\text{PS}}$	152	$172 \pm 60$	$\Omega_m$	0.3011	$0.295 \pm 0.036$	$k_D$	0.14005	$0.14001 \pm 0.00054$
$A_{143}^{\text{PS}}$	64.1	$53 \pm 10$	$\sigma_8$	0.8357	$0.845^{+0.037}_{-0.048}$	$100\theta_D$	0.161203	$0.16136 \pm 0.00032$
$A_{217}^{\text{PS}}$	119.2	$105^{+20}_{-20}$	$z_{\text{re}}$	11.38	$10.7 \pm 1.1$	$z_{\text{eq}}$	3361.8	$3380 \pm 44$
$A_{143}^{\text{CIB}}$	0.0	$< 11.1$	$H_0$	68.51	$69.9^{+3.6}_{-5.5}$	$100\theta_{\text{eq}}$	0.8205	$0.8169 \pm 0.0084$
$A_{217}^{\text{CIB}}$	24.9	$29^{+6}_{-9}$	$10^9 A_s$	2.213	$2.178^{+0.046}_{-0.054}$	$r_{\text{drag}}/D_V(0.57)$	0.07226	$0.07224 \pm 0.00077$
$A^{\text{tSZ}}_{143}$	5.75	—	$\Omega_m h^2$	0.14133	$0.1421 \pm 0.0018$			
$r_{143 \times 217}^{\text{PS}}$	0.914	$> 0.851$	$\Omega_m h^3$	0.0968	$0.0993^{+0.0055}_{-0.0082}$			

Best-fit  $\chi^2_{\text{eff}} = 9816.97$ ; R-1 = 0.00947

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.84 DR7: 0.33 6DF: 0.08 CMB - lowLike: 2014.42 lensing: 10.02 lowl: -7.59 CamSpec: 7798.34

### 19.3 base\_w\_wa\_planck\_lowl\_lowLike\_highL\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022054	$0.02201 \pm 0.00025$	$A^{\text{KSZ}}$	1.27	$5.34^{+2.7}_{-1.9}$	$\Omega_m$	0.3008	$0.296 \pm 0.036$
$\Omega_c h^2$	0.12086	$0.1209 \pm 0.0024$	$\beta_1^1$	0.51	$0.40 \pm 0.55$	$\sigma_8$	0.8586	$0.862^{+0.042}_{-0.052}$
$100\theta_{\text{MC}}$	1.04121	$1.04117 \pm 0.00060$	$A_{148}^{\text{PS, ACT}}$	10.22	$10.52 \pm 0.59$	$z_{\text{re}}$	11.46	$11.0 \pm 1.1$
$\tau$	0.0937	$0.088^{+0.012}_{-0.014}$	$A_{218}^{\text{PS, ACT}}$	75.35	$76.7 \pm 4.5$	$H_0$	69.08	$70.0^{+3.6}_{-5.5}$
$w$	-0.976	$-1.02^{+0.47}_{-0.33}$	$A_{95}^{\text{PS, SPT}}$	7.07	$7.63^{+1.3}_{-1.6}$	$10^9 A_s$	2.218	$2.194^{+0.050}_{-0.058}$
$w_a$	-0.39	$-0.35^{+0.83}_{-1.3}$	$A_{150}^{\text{PS, SPT}}$	9.73	$10.05 \pm 0.51$	$\Omega_m h^2$	0.14355	$0.1436 \pm 0.0023$
$n_s$	0.9571	$0.9558 \pm 0.0065$	$A_{220}^{\text{PS, SPT}}$	72.15	$74.2 \pm 4.4$	$\Omega_m h^3$	0.0992	$0.1006^{+0.0058}_{-0.0083}$
$\ln(10^{10} A_s)$	3.0991	$3.088^{+0.023}_{-0.026}$	$r_{95 \times 150}^{\text{PS}}$	0.812	$0.831 \pm 0.089$	$Y_p$	0.247704	$0.24768 \pm 0.00011$
$A_{100}^{\text{PS}}$	205	$215 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.572	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8386	$1.838 \pm 0.012$
$A_{143}^{\text{PS}}$	71.8	$73.6 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9121	$0.937 \pm 0.024$	Age/Gyr	13.752	$13.756 \pm 0.051$
$A_{217}^{\text{PS}}$	60.1	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.426	$0.43 \pm 0.19$	$z_*$	1090.500	$1090.58 \pm 0.47$
$A_{143}^{\text{CIB}}$	3.37	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.838	$0.85 \pm 0.20$	$r_*$	144.44	$144.46 \pm 0.55$
$A_{217}^{\text{CIB}}$	53.2	$49.6 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9917 \pm 0.0073$	$100\theta_*$	1.04137	$1.04133 \pm 0.00059$
$A_{143}^{\text{tSZ}}$	5.05	$2.51^{+1.1}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0015	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.36	$1059.23 \pm 0.53$
$r_{143 \times 217}^{\text{PS}}$	0.824	$0.823^{+0.068}_{-0.077}$	$y_{148}^{\text{ACTe}}$	0.9875	$0.9881 \pm 0.0072$	$r_{\text{drag}}$	147.21	$147.24 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.931$	$y_{217}^{\text{ACTe}}$	0.9601	$0.963 \pm 0.010$	$k_D$	0.14039	$0.14032 \pm 0.00061$
$\gamma^{\text{CIB}}$	0.671	$0.638 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9861	$0.983 \pm 0.019$	$100\theta_D$	0.161331	$0.16140 \pm 0.00031$
$c_{100}$	1.000579	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9843	$0.9870 \pm 0.0096$	$z_{\text{eq}}$	3415	$3416 \pm 55$
$c_{217}$	0.99735	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0155	$1.023 \pm 0.023$	$100\theta_{\text{eq}}$	0.8104	$0.810 \pm 0.010$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.409$	$\Omega_\Lambda$	0.6992	$0.704 \pm 0.036$	$r_{\text{drag}}/D_V(0.57)$	0.07219	$0.07216 \pm 0.00072$

Best-fit  $\chi_{\text{eff}}^2 = 10509.85$ ; R-1 = 0.00934

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.21 DR9: 0.74 6DF: 0.17 CMB - lowLike: 2014.62 lowl: -5.91 CamSpec: 7807.18 highL: 692.76

## 19.4 base\_w\_wa\_planck\_lowl\_lowLike\_highL\_BAO\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022187	$0.02208 \pm 0.00026$	$A^{\text{KSZ}}$	1.55	$4.82^{+2.6}_{-1.9}$	$\Omega_m$	0.3016	$0.296 \pm 0.037$
$\Omega_c h^2$	0.11869	$0.1195 \pm 0.0020$	$\beta_1^1$	0.39	$0.35 \pm 0.56$	$\sigma_8$	0.8374	$0.845^{+0.038}_{-0.049}$
$100\theta_{\text{MC}}$	1.04142	$1.04129 \pm 0.00057$	$A_{148}^{\text{PS, ACT}}$	10.46	$10.65^{+0.57}_{-0.63}$	$z_{\text{re}}$	11.60	$10.8 \pm 1.1$
$\tau$	0.0963	$0.087 \pm 0.013$	$A_{218}^{\text{PS, ACT}}$	76.53	$76.8^{+4.9}_{-4.4}$	$H_0$	68.50	$69.7^{+3.6}_{-5.7}$
$w$	-0.974	$-1.02^{+0.46}_{-0.36}$	$A_{95}^{\text{PS, SPT}}$	7.67	$7.84^{+1.4}_{-1.7}$	$10^9 A_s$	2.218	$2.180^{+0.048}_{-0.054}$
$w_a$	-0.18	$-0.20 \pm 0.91$	$A_{150}^{\text{PS, SPT}}$	10.01	$10.19 \pm 0.50$	$\Omega_m h^2$	0.14152	$0.1422 \pm 0.0019$
$n_s$	0.9619	$0.9587^{+0.0058}_{-0.0065}$	$A_{220}^{\text{PS, SPT}}$	73.50	$74.5 \pm 4.4$	$\Omega_m h^3$	0.0969	$0.0991^{+0.0055}_{-0.0084}$
$\ln(10^{10} A_s)$	3.0993	$3.082 \pm 0.023$	$r_{95 \times 150}^{\text{PS}}$	0.786	$0.831 \pm 0.088$	$Y_p$	0.247761	$0.24772 \pm 0.00011$
$A_{100}^{\text{PS}}$	204	$218 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.532	$0.58^{+0.10}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8294	$1.8312 \pm 0.0097$
$A_{143}^{\text{PS}}$	72.2	$74.9 \pm 8.1$	$r_{150 \times 220}^{\text{PS}}$	0.9086	$0.934 \pm 0.023$	Age/Gyr	13.7654	$13.764 \pm 0.050$
$A_{217}^{\text{PS}}$	59.7	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.424	$0.44 \pm 0.19$	$z_*$	1090.138	$1090.35 \pm 0.44$
$A_{143}^{\text{CIB}}$	3.09	$3.24 \pm 0.82$	$A_{\text{dust}}^{\text{ACTe}}$	0.842	$0.84 \pm 0.20$	$r_*$	144.901	$144.78 \pm 0.46$
$A_{217}^{\text{CIB}}$	52.1	$49.9 \pm 5.0$	$y_{148}^{\text{ACTs}}$	0.9920	$0.9919 \pm 0.0073$	$100\theta_*$	1.04156	$1.04144 \pm 0.00056$
$A_{143}^{\text{tSZ}}$	4.37	$2.44^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0039	$1.006 \pm 0.014$	$z_{\text{drag}}$	1059.51	$1059.30 \pm 0.55$
$r_{143 \times 217}^{\text{PS}}$	0.814	$0.828 \pm 0.069$	$y_{148}^{\text{ACTe}}$	0.9883	$0.9880 \pm 0.0072$	$r_{\text{drag}}$	147.633	$147.55 \pm 0.47$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.930$	$y_{217}^{\text{ACTe}}$	0.9624	$0.964 \pm 0.010$	$k_D$	0.14005	$0.14006 \pm 0.00055$
$\gamma^{\text{CIB}}$	0.658	$0.640 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9852	$0.984 \pm 0.020$	$100\theta_D$	0.161242	$0.16135 \pm 0.00032$
$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9864	$0.9879 \pm 0.0096$	$z_{\text{eq}}$	3366.2	$3382 \pm 44$
$c_{217}$	0.99732	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0183	$1.025^{+0.022}_{-0.024}$	$100\theta_{\text{eq}}$	0.8197	$0.8165 \pm 0.0084$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.404$	$\Omega_\Lambda$	0.6984	$0.704 \pm 0.037$	$r_{\text{drag}}/D_V(0.57)$	0.07230	$0.07229 \pm 0.00074$

Best-fit  $\chi_{\text{eff}}^2 = 10518.62$ ; R-1 = 0.02616

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.28 DR9: 0.91 6DF: 0.09 CMB - lowLike: 2014.63 lensing: 9.88 lowl: -6.72 CamSpec: 7808.43 highL: 691.01

## 19.5 base\_w\_wa\_planck\_lowl\_lowLike\_highL\_BAO\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022055	$0.02199 \pm 0.00025$	$A^{\text{KSZ}}$	1.83	$5.35^{+2.7}_{-1.9}$	$\Omega_m$	0.2868	$0.269^{+0.017}_{-0.021}$
$\Omega_c h^2$	0.12137	$0.1213 \pm 0.0024$	$\beta_1^1$	0.47	$0.41 \pm 0.55$	$\sigma_8$	0.8793	$0.892 \pm 0.030$
$100\theta_{\text{MC}}$	1.04122	$1.04112 \pm 0.00059$	$A_{148}^{\text{PS, ACT}}$	10.28	$10.53 \pm 0.59$	$z_{\text{re}}$	11.42	$11.0 \pm 1.1$
$\tau$	0.0931	$0.088^{+0.012}_{-0.014}$	$A_{218}^{\text{PS, ACT}}$	75.89	$76.7 \pm 4.5$	$H_0$	70.88	$73.2 \pm 2.5$
$w$	-1.012	$-1.28^{+0.22}_{-0.28}$	$A_{95}^{\text{PS, SPT}}$	7.21	$7.62^{+1.3}_{-1.6}$	$10^9 A_s$	2.218	$2.194^{+0.049}_{-0.059}$
$w_a$	-0.53	$0.20^{+0.97}_{-0.61}$	$A_{150}^{\text{PS, SPT}}$	9.804	$10.05 \pm 0.51$	$\Omega_m h^2$	0.14407	$0.1440 \pm 0.0023$
$n_s$	0.9555	$0.9549 \pm 0.0064$	$A_{220}^{\text{PS, SPT}}$	72.77	$74.2 \pm 4.4$	$\Omega_m h^3$	0.10212	$0.1054 \pm 0.0041$
$\ln(10^{10} A_s)$	3.0992	$3.088^{+0.023}_{-0.026}$	$r_{95 \times 150}^{\text{PS}}$	0.800	$0.832 \pm 0.089$	$Y_P$	0.247704	$0.24768 \pm 0.00011$
$A_{100}^{\text{PS}}$	206	$216 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.555	$0.59^{+0.11}_{-0.14}$	$10^9 A_s e^{-2\tau}$	1.8411	$1.839 \pm 0.012$
$A_{143}^{\text{PS}}$	72.5	$73.8 \pm 8.0$	$r_{150 \times 220}^{\text{PS}}$	0.9128	$0.937 \pm 0.023$	Age/Gyr	13.7123	$13.742^{+0.047}_{-0.052}$
$A_{217}^{\text{PS}}$	60.6	$60 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.420	$0.44 \pm 0.19$	$z_*$	1090.545	$1090.63 \pm 0.46$
$A_{143}^{\text{CIB}}$	3.21	$3.24 \pm 0.83$	$A_{\text{dust}}^{\text{ACTe}}$	0.836	$0.85 \pm 0.20$	$r_*$	144.31	$144.37 \pm 0.55$
$A_{217}^{\text{CIB}}$	52.3	$49.6^{+4.8}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9917	$0.9916 \pm 0.0072$	$100\theta_*$	1.04138	$1.04128 \pm 0.00058$
$A_{143}^{\text{tSZ}}$	4.66	$2.51^{+1.1}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0019	$1.005 \pm 0.013$	$z_{\text{drag}}$	1059.40	$1059.22 \pm 0.52$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.822^{+0.067}_{-0.077}$	$y_{148}^{\text{ACTe}}$	0.9878	$0.9879 \pm 0.0072$	$r_{\text{drag}}$	147.07	$147.16 \pm 0.56$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9602	$0.963 \pm 0.010$	$k_D$	0.14054	$0.14039 \pm 0.00062$
$\gamma^{\text{CIB}}$	0.657	$0.638 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9838	$0.983 \pm 0.020$	$100\theta_D$	0.161316	$0.16140 \pm 0.00031$
$c_{100}$	1.000594	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9843	$0.9871 \pm 0.0096$	$z_{\text{eq}}$	3427	$3424 \pm 54$
$c_{217}$	0.99731	$0.9974 \pm 0.0014$	$y_{220}^{\text{SPT}}$	1.0150	$1.024 \pm 0.023$	$100\theta_{\text{eq}}$	0.8083	$0.809 \pm 0.010$
$\xi^{\text{tSZ-CIB}}$	0.008	$< 0.413$	$\Omega_\Lambda$	0.7132	$0.731^{+0.021}_{-0.017}$	$r_{\text{drag}}/D_V(0.57)$	0.07261	$0.07206 \pm 0.00073$

Best-fit  $\chi_{\text{eff}}^2 = 10512.13$ ; R-1 = 0.02101

$\chi_{\text{eff}}^2$ : BAO - DR9: 1.47 DR7: 0.04 6DF: 0.59 CMB - lowLike: 2014.66 lowl: -5.67 CamSpec: 7807.08 highL: 692.33 Hubble - HST: 1.53

## 19.6 base\_w\_wa\_planck\_lowl\_lowLike\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022117	$0.02209 \pm 0.00028$	$A_{143}^{\text{tSZ}}$	9.86	—	$\Omega_m h^2$	0.14254	$0.1424 \pm 0.0025$
$\Omega_c h^2$	0.11978	$0.1196 \pm 0.0026$	$r_{143 \times 217}^{\text{PS}}$	0.900	$> 0.853$	$\Omega_m h^3$	0.10555	$0.1040 \pm 0.0033$
$100\theta_{\text{MC}}$	1.04135	$1.04137 \pm 0.00063$	$r_{143 \times 217}^{\text{CIB}}$	0.488	$0.42 \pm 0.22$	$Y_{\text{P}}$	0.247731	$0.24772 \pm 0.00012$
$\tau$	0.0859	$0.089^{+0.012}_{-0.014}$	$\gamma^{\text{CIB}}$	0.521	$0.53^{+0.13}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8373	$1.835 \pm 0.013$
$w$	-0.829	$-0.93^{+0.16}_{-0.11}$	$c_{100}$	1.000594	$1.00058 \pm 0.00040$	Age/Gyr	13.604	$13.650^{+0.063}_{-0.083}$
$w_a$	-1.71	$< -0.852$	$c_{217}$	0.99632	$0.9964 \pm 0.0014$	$z_*$	1090.33	$1090.35 \pm 0.52$
$n_s$	0.9618	$0.9609 \pm 0.0072$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	144.67	$144.74 \pm 0.59$
$\ln(10^{10} A_s)$	3.0826	$3.088^{+0.024}_{-0.027}$	$A^{\text{kSZ}}$	0.15	$< 6.04$	$100\theta_*$	1.04150	$1.04153 \pm 0.00062$
$\alpha_{\text{SNLS}}$	1.428	$1.43^{+0.10}_{-0.12}$	$\beta_1^1$	0.66	$0.52 \pm 0.56$	$z_{\text{drag}}$	1059.40	$1059.33 \pm 0.57$
$\beta_{\text{SNLS}}$	3.265	$3.27 \pm 0.11$	$\Omega_{\Lambda}$	0.7400	$0.733^{+0.021}_{-0.018}$	$r_{\text{drag}}$	147.42	$147.50 \pm 0.59$
$A_{100}^{\text{PS}}$	129	$169 \pm 60$	$\Omega_m$	0.2600	$0.267^{+0.018}_{-0.021}$	$k_{\text{D}}$	0.14022	$0.14011 \pm 0.00063$
$A_{143}^{\text{PS}}$	51.4	$54 \pm 10$	$\sigma_8$	0.8941	$0.884 \pm 0.026$	$100\theta_{\text{D}}$	0.161295	$0.16135 \pm 0.00033$
$A_{217}^{\text{PS}}$	117.1	$107^{+20}_{-20}$	$z_{\text{re}}$	10.70	$11.0 \pm 1.1$	$z_{\text{eq}}$	3391	$3386 \pm 59$
$A_{143}^{\text{CIB}}$	3.09	$< 10.5$	$H_0$	74.05	$73.1 \pm 2.4$	$100\theta_{\text{eq}}$	0.8150	$0.816 \pm 0.011$
$A_{217}^{\text{CIB}}$	27.3	$29^{+6}_{-9}$	$10^9 A_s$	2.182	$2.195^{+0.051}_{-0.060}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07481	$0.0741^{+0.0015}_{-0.0013}$

Best-fit  $\chi_{\text{eff}}^2 = 10223.33$ ; R-1 = 0.00820

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.39 lowl: -7.63 CamSpec: 7796.52 SN - SNLS: 419.24

## 19.7 base\_w\_wa\_planck\_lowl\_lowLike\_SNLS\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022345	$0.02223 \pm 0.00027$	$A_{143}^{\text{tSZ}}$	7.47	—	$\Omega_m h^2$	0.14017	$0.1407 \pm 0.0020$
$\Omega_c h^2$	0.11718	$0.1178 \pm 0.0021$	$r_{143 \times 217}^{\text{PS}}$	0.937	$> 0.846$	$\Omega_m h^3$	0.10389	$0.1035 \pm 0.0033$
$100\theta_{\text{MC}}$	1.04166	$1.04156 \pm 0.00062$	$r_{143 \times 217}^{\text{CIB}}$	0.490	$0.43 \pm 0.22$	$Y_{\text{P}}$	0.247829	$0.24778 \pm 0.00012$
$\tau$	0.0965	$0.088^{+0.012}_{-0.014}$	$\gamma^{\text{CIB}}$	0.544	$0.53 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8279	$1.827 \pm 0.010$
$w$	-0.949	$-0.92^{+0.17}_{-0.11}$	$c_{100}$	1.000598	$1.00059 \pm 0.00040$	Age/Gyr	13.606	$13.625^{+0.062}_{-0.086}$
$w_a$	-0.92	$< -0.811$	$c_{217}$	0.99623	$0.9964 \pm 0.0013$	$z_*$	1089.804	$1090.01 \pm 0.47$
$n_s$	0.9697	$0.9648 \pm 0.0067$	$\xi^{\text{tSZ-CIB}}$	0.19	—	$r_*$	145.174	$145.11 \pm 0.49$
$\ln(10^{10} A_s)$	3.0987	$3.082^{+0.022}_{-0.025}$	$A^{\text{kSZ}}$	1.81	—	$100\theta_*$	1.04179	$1.04170 \pm 0.00061$
$\alpha_{\text{SNLS}}$	1.425	$1.43^{+0.10}_{-0.12}$	$\beta_1^1$	0.64	$0.46 \pm 0.56$	$z_{\text{drag}}$	1059.74	$1059.52 \pm 0.57$
$\beta_{\text{SNLS}}$	3.263	$3.27 \pm 0.11$	$\Omega_{\Lambda}$	0.7448	$0.740^{+0.021}_{-0.017}$	$r_{\text{drag}}$	147.863	$147.84 \pm 0.50$
$A_{100}^{\text{PS}}$	129	$167 \pm 60$	$\Omega_m$	0.2552	$0.260^{+0.017}_{-0.021}$	$k_{\text{D}}$	0.13994	$0.13987 \pm 0.00056$
$A_{143}^{\text{PS}}$	55.2	$51 \pm 10$	$\sigma_8$	0.8806	$0.872^{+0.024}_{-0.022}$	$100\theta_{\text{D}}$	0.161107	$0.16124 \pm 0.00032$
$A_{217}^{\text{PS}}$	119.7	$104^{+20}_{-20}$	$z_{\text{re}}$	11.49	$10.8 \pm 1.1$	$z_{\text{eq}}$	3333.9	$3346 \pm 48$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$H_0$	74.12	$73.6 \pm 2.4$	$100\theta_{\text{eq}}$	0.8262	$0.8238^{+0.0090}_{-0.010}$
$A_{217}^{\text{CIB}}$	23.3	$29^{+6}_{-9}$	$10^9 A_s$	2.217	$2.180^{+0.048}_{-0.056}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07494	$0.0747^{+0.0015}_{-0.0012}$

Best-fit  $\chi_{\text{eff}}^2 = 10234.16$ ; R-1 = 0.00984

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.54 lensing: 9.55 lowl: -8.29 CamSpec: 7798.23 SN - SNLS: 419.52



## 19.8 base\_w\_wa\_planck\_lowl\_lowLike\_SNLS\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022050	$0.02195 \pm 0.00027$	$A_{143}^{\text{tSZ}}$	4.78	—	$\Omega_m h^2$	0.14372	$0.1442 \pm 0.0024$
$\Omega_c h^2$	0.12102	$0.1216 \pm 0.0025$	$r_{143 \times 217}^{\text{PS}}$	0.933	$> 0.858$	$\Omega_m h^3$	0.10115	$0.1018 \pm 0.0030$
$100\theta_{\text{MC}}$	1.04116	$1.04108 \pm 0.00061$	$r_{143 \times 217}^{\text{CIB}}$	0.653	$0.42 \pm 0.22$	$Y_{\text{P}}$	0.247703	$0.24766 \pm 0.00012$
$\tau$	0.0924	$0.086^{+0.012}_{-0.014}$	$\gamma^{\text{CIB}}$	0.552	$0.54 \pm 0.13$	$10^9 A_s e^{-2\tau}$	1.8450	$1.843 \pm 0.013$
$w$	-1.012	$-1.03 \pm 0.14$	$c_{100}$	1.000588	$1.00058 \pm 0.00040$	Age/Gyr	13.7281	$13.741^{+0.046}_{-0.051}$
$w_a$	-0.44	$-0.47^{+0.76}_{-0.57}$	$c_{217}$	0.99650	$0.9965 \pm 0.0014$	$z_*$	1090.52	$1090.71 \pm 0.51$
$n_s$	0.9616	$0.9566 \pm 0.0069$	$\xi^{\text{tSZ-CIB}}$	0.42	—	$r_*$	144.40	$144.34 \pm 0.57$
$\ln(10^{10} A_s)$	3.0999	$3.087 \pm 0.024$	$A^{\text{kSZ}}$	0.23	$< 5.92$	$100\theta_*$	1.04131	$1.04124 \pm 0.00060$
$\alpha_{\text{SNLS}}$	1.421	$1.43 \pm 0.11$	$\beta_1^1$	0.72	$0.58 \pm 0.56$	$z_{\text{drag}}$	1059.36	$1059.14 \pm 0.56$
$\beta_{\text{SNLS}}$	3.254	$3.26 \pm 0.11$	$\Omega_{\Lambda}$	0.7098	$0.710^{+0.014}_{-0.013}$	$r_{\text{drag}}$	147.17	$147.14 \pm 0.57$
$A_{100}^{\text{PS}}$	166	$171 \pm 60$	$\Omega_m$	0.2902	$0.290^{+0.013}_{-0.014}$	$k_{\text{D}}$	0.14043	$0.14038 \pm 0.00062$
$A_{143}^{\text{PS}}$	68.6	$55 \pm 10$	$\sigma_8$	0.8744	$0.874 \pm 0.027$	$100\theta_{\text{D}}$	0.161322	$0.16145 \pm 0.00033$
$A_{217}^{\text{PS}}$	122.4	$108^{+20}_{-20}$	$z_{\text{re}}$	11.35	$10.8 \pm 1.1$	$z_{\text{eq}}$	3419	$3430 \pm 58$
$A_{143}^{\text{CIB}}$	0.0	$< 10.4$	$H_0$	70.38	$70.6 \pm 1.6$	$100\theta_{\text{eq}}$	0.8097	$0.808 \pm 0.011$
$A_{217}^{\text{CIB}}$	24.5	$29^{+6}_{-9}$	$10^9 A_s$	2.220	$2.191 \pm 0.053$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07248	$0.07229 \pm 0.00068$

Best-fit  $\chi_{\text{eff}}^2 = 10227.43$ ; R-1 = 0.02872

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.00 6DF: 0.44 DR9: 1.21 CMB - lowLike: 2014.55 lowl: -6.97 CamSpec: 7796.93 SN - SNLS: 420.72

## 19.9 base\_w\_wa\_planck\_lowl\_lowLike\_SNLS\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022153	$0.02210 \pm 0.00027$	$A_{143}^{\text{tSZ}}$	7.09	—	$\Omega_m h^2$	0.14254	$0.1423 \pm 0.0024$
$\Omega_c h^2$	0.11974	$0.1195 \pm 0.0025$	$r_{143 \times 217}^{\text{PS}}$	0.947	$> 0.853$	$\Omega_m h^3$	0.10503	$0.1045 \pm 0.0027$
$100\theta_{\text{MC}}$	1.04137	$1.04140 \pm 0.00062$	$r_{143 \times 217}^{\text{CIB}}$	0.673	$0.42 \pm 0.22$	$Y_{\text{P}}$	0.247747	$0.24772 \pm 0.00012$
$\tau$	0.0941	$0.089^{+0.012}_{-0.014}$	$\gamma^{\text{CIB}}$	0.558	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8394	$1.835 \pm 0.013$
$w$	-0.998	$-0.93^{+0.16}_{-0.10}$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	Age/Gyr	13.641	$13.639^{+0.054}_{-0.062}$
$w_a$	-0.87	$< -0.946$	$c_{217}$	0.99638	$0.9964 \pm 0.0014$	$z_*$	1090.274	$1090.33 \pm 0.50$
$n_s$	0.9641	$0.9611 \pm 0.0070$	$\xi^{\text{tSZ-CIB}}$	0.24	—	$r_*$	144.65	$144.76 \pm 0.58$
$\ln(10^{10} A_s)$	3.1002	$3.088^{+0.023}_{-0.027}$	$A^{\text{kSZ}}$	0.43	$< 6.06$	$100\theta_*$	1.04152	$1.04155 \pm 0.00061$
$\alpha_{\text{SNLS}}$	1.426	$1.43^{+0.10}_{-0.12}$	$\beta_1^1$	0.73	$0.52 \pm 0.56$	$z_{\text{drag}}$	1059.47	$1059.34 \pm 0.56$
$\beta_{\text{SNLS}}$	3.260	$3.27 \pm 0.11$	$\Omega_{\Lambda}$	0.7375	$0.736^{+0.015}_{-0.013}$	$r_{\text{drag}}$	147.39	$147.52 \pm 0.58$
$A_{100}^{\text{PS}}$	141	$169 \pm 60$	$\Omega_m$	0.2625	$0.264^{+0.013}_{-0.015}$	$k_{\text{D}}$	0.14028	$0.14010 \pm 0.00063$
$A_{143}^{\text{PS}}$	61.0	$53 \pm 10$	$\sigma_8$	0.8965	$0.887 \pm 0.023$	$100\theta_{\text{D}}$	0.161249	$0.16135 \pm 0.00033$
$A_{217}^{\text{PS}}$	123.2	$107^{+20}_{-10}$	$z_{\text{re}}$	11.42	$11.0 \pm 1.1$	$z_{\text{eq}}$	3391	$3384 \pm 58$
$A_{143}^{\text{CIB}}$	0.0	$< 10.5$	$H_0$	73.68	$73.4 \pm 1.7$	$100\theta_{\text{eq}}$	0.8151	$0.816 \pm 0.011$
$A_{217}^{\text{CIB}}$	23.9	$29^{+6}_{-9}$	$10^9 A_s$	2.220	$2.195^{+0.050}_{-0.061}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07398	$0.0743 \pm 0.0011$

Best-fit  $\chi_{\text{eff}}^2 = 10224.00$ ; R-1 = 0.00779

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.61 lowl: -7.57 CamSpec: 7796.63 Hubble - HST: 0.01 SN - SNLS: 419.81

## 19.10 base\_w\_wa\_planck\_lowl\_lowLike\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022124	$0.02206 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.000	$0.43 \pm 0.23$	$Y_P$	0.247735	$0.24771 \pm 0.00012$
$\Omega_c h^2$	0.12005	$0.1200 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.539	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8416	$1.836 \pm 0.013$
$100\theta_{\text{MC}}$	1.04132	$1.04132 \pm 0.00062$	$c_{100}$	1.000590	$1.00059 \pm 0.00040$	Age/Gyr	13.710	$13.724^{+0.077}_{-0.11}$
$\tau$	0.0931	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99647	$0.9964 \pm 0.0014$	$z_*$	1090.34	$1090.42 \pm 0.53$
$w$	-0.990	$-0.96^{+0.24}_{-0.18}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	144.60	$144.66 \pm 0.59$
$w_a$	-0.49	$-0.63^{+0.59}_{-1.2}$	$A^{\text{kSZ}}$	0.00	$< 6.09$	$100\theta_*$	1.04147	$1.04147 \pm 0.00061$
$n_s$	0.9640	$0.9602 \pm 0.0073$	$\beta_1^1$	0.74	$0.53 \pm 0.56$	$z_{\text{drag}}$	1059.44	$1059.29 \pm 0.57$
$\ln(10^{10} A_s)$	3.0995	$3.089^{+0.024}_{-0.027}$	$\Omega_\Lambda$	0.7141	$0.711^{+0.026}_{-0.021}$	$r_{\text{drag}}$	147.35	$147.44 \pm 0.59$
$A_{100}^{\text{PS}}$	149	$170 \pm 60$	$\Omega_m$	0.2859	$0.289^{+0.021}_{-0.026}$	$k_D$	0.14031	$0.14016 \pm 0.00063$
$A_{143}^{\text{PS}}$	60.7	$53 \pm 10$	$\sigma_8$	0.8698	$0.861 \pm 0.030$	$100\theta_D$	0.161272	$0.16137 \pm 0.00033$
$A_{217}^{\text{PS}}$	123.7	$107^{+20}_{-10}$	$z_{\text{re}}$	11.36	$11.0 \pm 1.1$	$z_{\text{eq}}$	3397	$3394 \pm 60$
$A_{143}^{\text{CIB}}$	1.46	$< 10.4$	$H_0$	70.67	$70.4 \pm 2.7$	$100\theta_{\text{eq}}$	0.8138	$0.814 \pm 0.011$
$A_{217}^{\text{CIB}}$	23.8	$29^{+6}_{-9}$	$10^9 A_s$	2.219	$2.197^{+0.051}_{-0.060}$	$r_{\text{drag}}/D_V(0.57)$	0.07289	$0.0729^{+0.0018}_{-0.0015}$
$A_{143}^{\text{tSZ}}$	6.13	—	$\Omega_m h^2$	0.14282	$0.1427 \pm 0.0025$			
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.851$	$\Omega_m h^3$	0.10093	$0.1005 \pm 0.0038$			

Best-fit  $\chi_{\text{eff}}^2 = 9934.63$ ; R-1 = 0.01253

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.51 lowl: -7.38 CamSpec: 7796.86 SN - Union2.1: 129.99

### 19.11 base\_w\_wa\_planck\_lowl\_lowLike\_Union2\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022284	$0.02217 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.473	$0.44 \pm 0.22$	$Y_P$	0.247803	$0.24775 \pm 0.00012$
$\Omega_c h^2$	0.11758	$0.1183 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.560	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8299	$1.828 \pm 0.010$
$100\theta_{\text{MC}}$	1.04159	$1.04147 \pm 0.00060$	$c_{100}$	1.000595	$1.00059 \pm 0.00040$	Age/Gyr	13.693	$13.704^{+0.077}_{-0.11}$
$\tau$	0.0951	$0.089^{+0.012}_{-0.014}$	$c_{217}$	0.99636	$0.9964 \pm 0.0014$	$z_*$	1089.917	$1090.13 \pm 0.48$
$w$	-0.972	$-0.94^{+0.25}_{-0.18}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	145.115	$145.03 \pm 0.49$
$w_a$	-0.42	$-0.65^{+0.60}_{-1.2}$	$A^{\text{kSZ}}$	0.6	—	$100\theta_*$	1.04172	$1.04162 \pm 0.00059$
$n_s$	0.9685	$0.9632 \pm 0.0067$	$\beta_1^1$	0.66	$0.47 \pm 0.56$	$z_{\text{drag}}$	1059.63	$1059.42 \pm 0.58$
$\ln(10^{10} A_s)$	3.0970	$3.084^{+0.022}_{-0.025}$	$\Omega_\Lambda$	0.7204	$0.717^{+0.025}_{-0.021}$	$r_{\text{drag}}$	147.823	$147.77 \pm 0.50$
$A_{100}^{\text{PS}}$	150	$169^{+60}_{-60}$	$\Omega_m$	0.2796	$0.283^{+0.021}_{-0.025}$	$k_D$	0.13993	$0.13989 \pm 0.00057$
$A_{143}^{\text{PS}}$	61.7	$52 \pm 10$	$\sigma_8$	0.8528	$0.850 \pm 0.026$	$100\theta_D$	0.161166	$0.16130 \pm 0.00033$
$A_{217}^{\text{PS}}$	117.4	$105^{+20}_{-20}$	$z_{\text{re}}$	11.42	$10.9 \pm 1.1$	$z_{\text{eq}}$	3342.1	$3356 \pm 49$
$A_{143}^{\text{CIB}}$	0.0	$< 11.0$	$H_0$	70.89	$70.8 \pm 2.7$	$100\theta_{\text{eq}}$	0.8245	$0.8216 \pm 0.0094$
$A_{217}^{\text{CIB}}$	25.6	$29^{+6}_{-9}$	$10^9 A_s$	2.213	$2.184^{+0.047}_{-0.056}$	$r_{\text{drag}}/D_V(0.57)$	0.07351	$0.0735^{+0.0019}_{-0.0015}$
$A_{143}^{\text{tSZ}}$	6.57	—	$\Omega_m h^2$	0.14051	$0.1411 \pm 0.0020$			
$r_{143 \times 217}^{\text{PS}}$	0.888	$> 0.846$	$\Omega_m h^3$	0.09961	$0.0999 \pm 0.0037$			

Best-fit  $\chi_{\text{eff}}^2 = 9945.00$ ; R-1 = 0.01812

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.42 lensing: 9.59 lowl: -8.01 CamSpec: 7798.54 SN - Union2.1: 129.98

## 19.12 base\_w\_wa\_planck\_lowl\_lowLike\_Union2\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022078	$0.02199 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.338	$0.43^{+0.22}_{-0.28}$	$Y_P$	0.247715	$0.24767 \pm 0.00012$
$\Omega_c h^2$	0.12080	$0.1209 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.547	$0.54^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8441	$1.840 \pm 0.012$
$100\theta_{\text{MC}}$	1.04123	$1.04118 \pm 0.00061$	$c_{100}$	1.000597	$1.00059 \pm 0.00040$	Age/Gyr	13.748	$13.762^{+0.048}_{-0.054}$
$\tau$	0.0917	$0.088^{+0.012}_{-0.013}$	$c_{217}$	0.99642	$0.9964 \pm 0.0014$	$z_*$	1090.464	$1090.60 \pm 0.49$
$w$	-0.994	$-1.01 \pm 0.18$	$\xi^{\text{tSZ-CIB}}$	0.23	—	$r_*$	144.44	$144.47 \pm 0.56$
$w_a$	-0.34	$-0.34^{+0.79}_{-0.59}$	$A^{\text{kSZ}}$	0.4	—	$100\theta_*$	1.04138	$1.04134 \pm 0.00060$
$n_s$	0.9616	$0.9580 \pm 0.0069$	$\beta_1^1$	0.72	$0.55 \pm 0.56$	$z_{\text{drag}}$	1059.40	$1059.18 \pm 0.56$
$\ln(10^{10} A_s)$	3.0980	$3.088 \pm 0.024$	$\Omega_\Lambda$	0.7015	$0.703^{+0.018}_{-0.016}$	$r_{\text{drag}}$	147.20	$147.27 \pm 0.57$
$A_{100}^{\text{PS}}$	146	$171 \pm 60$	$\Omega_m$	0.2985	$0.297^{+0.016}_{-0.018}$	$k_D$	0.14042	$0.14028 \pm 0.00062$
$A_{143}^{\text{PS}}$	63.7	$54 \pm 10$	$\sigma_8$	0.8612	$0.859 \pm 0.028$	$100\theta_D$	0.161301	$0.16143 \pm 0.00033$
$A_{217}^{\text{PS}}$	123.2	$107^{+20}_{-10}$	$z_{\text{re}}$	11.28	$10.9 \pm 1.1$	$z_{\text{eq}}$	3414	$3415 \pm 56$
$A_{143}^{\text{CIB}}$	0.0	$< 10.4$	$H_0$	69.34	$69.6 \pm 1.9$	$100\theta_{\text{eq}}$	0.8106	$0.810 \pm 0.010$
$A_{217}^{\text{CIB}}$	24.0	$29^{+6}_{-9}$	$10^9 A_s$	2.215	$2.194^{+0.051}_{-0.057}$	$r_{\text{drag}}/D_V(0.57)$	0.07221	$0.07210 \pm 0.00071$
$A^{\text{tSZ}}_{143}$	6.44	—	$\Omega_m h^2$	0.14352	$0.1436 \pm 0.0024$			
$r_{143 \times 217}^{\text{PS}}$	0.927	$> 0.853$	$\Omega_m h^3$	0.09952	$0.0999 \pm 0.0033$			

Best-fit  $\chi^2_{\text{eff}} = 9936.06$ ; R-1 = 0.01549

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.17 6DF: 0.21 DR9: 0.76 CMB - lowLike: 2014.47 lowl: -6.90 CamSpec: 7796.86 SN - Union2.1: 129.90

### 19.13 base\_w\_wa\_planck\_lowl\_lowLike\_Union2\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022161	$0.02211 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.436	$0.43 \pm 0.23$	$Y_P$	0.247750	$0.24773 \pm 0.00012$
$\Omega_c h^2$	0.11949	$0.1195^{+0.0025}_{-0.0028}$	$\gamma^{\text{CIB}}$	0.560	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8384	$1.835^{+0.012}_{-0.014}$
$100\theta_{\text{MC}}$	1.04140	$1.04140 \pm 0.00061$	$c_{100}$	1.000606	$1.00059 \pm 0.00040$	Age/Gyr	13.667	$13.672^{+0.059}_{-0.077}$
$\tau$	0.0942	$0.090^{+0.012}_{-0.014}$	$c_{217}$	0.99643	$0.9964 \pm 0.0014$	$z_*$	1090.24	$1090.31 \pm 0.52$
$w$	-0.991	$-0.96^{+0.24}_{-0.15}$	$\xi^{\text{tSZ-CIB}}$	0.25	—	$r_*$	144.71	$144.75 \pm 0.58$
$w_a$	-0.69	$< -0.511$	$A^{\text{kSZ}}$	0.75	$< 6.01$	$100\theta_*$	1.04155	$1.04156 \pm 0.00060$
$n_s$	0.9646	$0.9612 \pm 0.0071$	$\beta_1^1$	0.73	$0.52 \pm 0.56$	$z_{\text{drag}}$	1059.47	$1059.37 \pm 0.58$
$\ln(10^{10} A_s)$	3.0999	$3.090^{+0.024}_{-0.027}$	$\Omega_\Lambda$	0.7286	$0.727^{+0.017}_{-0.014}$	$r_{\text{drag}}$	147.45	$147.51 \pm 0.58$
$A_{100}^{\text{PS}}$	145	$168 \pm 60$	$\Omega_m$	0.2714	$0.273^{+0.014}_{-0.017}$	$k_D$	0.14023	$0.14012 \pm 0.00062$
$A_{143}^{\text{PS}}$	61.3	$53 \pm 10$	$\sigma_8$	0.8825	$0.876 \pm 0.025$	$100\theta_D$	0.161250	$0.16133 \pm 0.00033$
$A_{217}^{\text{PS}}$	121.8	$107^{+20}_{-10}$	$z_{\text{re}}$	11.42	$11.1 \pm 1.1$	$z_{\text{eq}}$	3385	$3384^{+56}_{-63}$
$A_{143}^{\text{CIB}}$	0.0	$< 10.2$	$H_0$	72.41	$72.3 \pm 1.8$	$100\theta_{\text{eq}}$	0.8162	$0.816 \pm 0.011$
$A_{217}^{\text{CIB}}$	24.2	$29^{+6}_{-9}$	$10^9 A_s$	2.220	$2.198^{+0.051}_{-0.061}$	$r_{\text{drag}}/D_V(0.57)$	0.07363	$0.0737^{+0.0014}_{-0.0013}$
$A_{143}^{\text{tSZ}}$	6.69	—	$\Omega_m h^2$	0.14230	$0.1423^{+0.0023}_{-0.0026}$			
$r_{143 \times 217}^{\text{PS}}$	0.942	$> 0.852$	$\Omega_m h^3$	0.10305	$0.1028 \pm 0.0029$			

Best-fit  $\chi_{\text{eff}}^2 = 9935.45$ ; R-1 = 0.01502

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.57 lowl: -7.57 CamSpec: 7796.91 Hubble - HST: 0.36 SN - Union2.1: 130.69

### 19.14 base\_w\_wa\_planck\_lowl\_lowLike\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022143	$0.02207 \pm 0.00028$	$r_{143 \times 217}^{\text{CIB}}$	0.708	$0.42 \pm 0.23$	$Y_P$	0.247742	$0.24771 \pm 0.00012$
$\Omega_c h^2$	0.11987	$0.1199 \pm 0.0026$	$\gamma^{\text{CIB}}$	0.547	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8403	$1.836 \pm 0.013$
$100\theta_{\text{MC}}$	1.04137	$1.04131 \pm 0.00063$	$c_{100}$	1.000571	$1.00058 \pm 0.00040$	Age/Gyr	13.633	$13.668^{+0.060}_{-0.087}$
$\tau$	0.0923	$0.089 \pm 0.013$	$c_{217}$	0.99649	$0.9964 \pm 0.0014$	$z_*$	1090.30	$1090.41 \pm 0.53$
$w$	-1.013	$-1.11^{+0.36}_{-0.21}$	$\xi^{\text{tSZ-CIB}}$	0.14	—	$r_*$	144.63	$144.67 \pm 0.59$
$w_a$	-0.91	$< -0.105$	$A^{\text{kSZ}}$	0.37	$< 6.07$	$100\theta_*$	1.04152	$1.04146 \pm 0.00062$
$n_s$	0.9634	$0.9602 \pm 0.0073$	$\beta_1^1$	0.72	$0.54 \pm 0.57$	$z_{\text{drag}}$	1059.47	$1059.30 \pm 0.58$
$\ln(10^{10} A_s)$	3.0971	$3.089 \pm 0.025$	$\Omega_\Lambda$	0.7415	$0.741^{+0.020}_{-0.017}$	$r_{\text{drag}}$	147.37	$147.44 \pm 0.59$
$A_{100}^{\text{PS}}$	161	$169 \pm 60$	$\Omega_m$	0.2585	$0.259^{+0.017}_{-0.020}$	$k_D$	0.14029	$0.14016 \pm 0.00063$
$A_{143}^{\text{PS}}$	67.0	$53 \pm 10$	$\sigma_8$	0.9014	$0.896 \pm 0.032$	$100\theta_D$	0.161260	$0.16136 \pm 0.00034$
$A_{217}^{\text{PS}}$	120.6	$107^{+20}_{-20}$	$z_{\text{re}}$	11.27	$11.0 \pm 1.1$	$z_{\text{eq}}$	3393	$3393 \pm 59$
$A_{143}^{\text{CIB}}$	0.0	$< 10.4$	$H_0$	74.29	$74.4 \pm 2.6$	$100\theta_{\text{eq}}$	0.8146	$0.815 \pm 0.011$
$A_{217}^{\text{CIB}}$	25.1	$29^{+6}_{-9}$	$10^9 A_s$	2.213	$2.197^{+0.052}_{-0.059}$	$r_{\text{drag}}/D_V(0.57)$	0.07408	$0.0736^{+0.0016}_{-0.0013}$
$A^{\text{tSZ}}_{143}$	5.49	—	$\Omega_m h^2$	0.14266	$0.1427 \pm 0.0025$			
$r_{143 \times 217}^{\text{PS}}$	0.895	$> 0.853$	$\Omega_m h^3$	0.10598	$0.1061 \pm 0.0042$			

Best-fit  $\chi^2_{\text{eff}} = 9804.14$ ; R-1 = 0.01155

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.52 lowl: -7.54 CamSpec: 7796.56 Hubble - HST: 0.02

### 19.15 base\_w\_wa\_planck\_lowl\_lowLike\_HST\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022294	$0.02217 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.399	$0.43 \pm 0.22$	$Y_P$	0.247807	$0.24775 \pm 0.00012$
$\Omega_c h^2$	0.11744	$0.1182 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.549	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8293	$1.828 \pm 0.010$
$100\theta_{\text{MC}}$	1.04158	$1.04146 \pm 0.00061$	$c_{100}$	1.000572	$1.00059 \pm 0.00040$	Age/Gyr	13.621	$13.655^{+0.061}_{-0.093}$
$\tau$	0.0943	$0.088 \pm 0.013$	$c_{217}$	0.99634	$0.9964 \pm 0.0014$	$z_*$	1089.892	$1090.12 \pm 0.48$
$w$	-0.989	$-1.07^{+0.36}_{-0.21}$	$\xi^{\text{tSZ-CIB}}$	0.20	—	$r_*$	145.14	$145.05 \pm 0.50$
$w_a$	-0.77	$< -0.110$	$A^{\text{kSZ}}$	1.11	—	$100\theta_*$	1.04171	$1.04161 \pm 0.00060$
$n_s$	0.9688	$0.9635 \pm 0.0067$	$\beta_1^1$	0.58	$0.47 \pm 0.57$	$z_{\text{drag}}$	1059.67	$1059.42 \pm 0.58$
$\ln(10^{10} A_s)$	3.0951	$3.083 \pm 0.023$	$\Omega_\Lambda$	0.7444	$0.744^{+0.020}_{-0.017}$	$r_{\text{drag}}$	147.85	$147.79 \pm 0.51$
$A_{100}^{\text{PS}}$	148	$169 \pm 60$	$\Omega_m$	0.2556	$0.256^{+0.017}_{-0.020}$	$k_D$	0.13991	$0.13987 \pm 0.00058$
$A_{143}^{\text{PS}}$	62.7	$52 \pm 10$	$\sigma_8$	0.8809	$0.880 \pm 0.027$	$100\theta_D$	0.161157	$0.16129 \pm 0.00033$
$A_{217}^{\text{PS}}$	118.5	$106^{+20}_{-20}$	$z_{\text{re}}$	11.33	$10.9 \pm 1.1$	$z_{\text{eq}}$	3339.0	$3353 \pm 49$
$A_{143}^{\text{CIB}}$	0.0	$< 10.9$	$H_0$	74.11	$74.3 \pm 2.6$	$100\theta_{\text{eq}}$	0.8251	$0.8221 \pm 0.0095$
$A_{217}^{\text{CIB}}$	24.6	$29^{+6}_{-9}$	$10^9 A_s$	2.209	$2.182 \pm 0.051$	$r_{\text{drag}}/D_V(0.57)$	0.07468	$0.0741^{+0.0018}_{-0.0012}$
$A_{143}^{\text{tSZ}}$	5.80	—	$\Omega_m h^2$	0.14038	$0.1410 \pm 0.0020$			
$r_{143 \times 217}^{\text{PS}}$	0.909	$> 0.848$	$\Omega_m h^3$	0.10404	$0.1048 \pm 0.0041$			

Best-fit  $\chi_{\text{eff}}^2 = 9814.62$ ; R-1 = 0.01656

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.42 lensing: 9.60 lowl: -8.24 CamSpec: 7798.27 Hubble - HST: 0.01



### 19.16 base\_w\_wa\_planck\_lowl\_lowLike\_HST\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.021978	$0.02196 \pm 0.00027$	$r_{143 \times 217}^{\text{CIB}}$	0.471	$0.43 \pm 0.22$	$Y_P$	0.247671	$0.24766 \pm 0.00012$
$\Omega_c h^2$	0.12103	$0.1213 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.518	$0.53^{+0.14}_{-0.12}$	$10^9 A_s e^{-2\tau}$	1.8403	$1.842 \pm 0.012$
$100\theta_{\text{MC}}$	1.04117	$1.04110 \pm 0.00062$	$c_{100}$	1.000590	$1.00058 \pm 0.00039$	Age/Gyr	13.750	$13.748 \pm 0.052$
$\tau$	0.0756	$0.087 \pm 0.013$	$c_{217}$	0.99629	$0.9965 \pm 0.0014$	$z_*$	1090.62	$1090.66 \pm 0.50$
$w$	-1.335	$-1.30^{+0.24}_{-0.28}$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$r_*$	144.45	$144.40 \pm 0.56$
$w_a$	0.46	$0.27^{+1.0}_{-0.62}$	$A^{\text{kSZ}}$	7.07	$< 6.14$	$100\theta_*$	1.04133	$1.04127 \pm 0.00061$
$n_s$	0.9561	$0.9570 \pm 0.0070$	$\beta_1^1$	0.66	$0.56 \pm 0.57$	$z_{\text{drag}}$	1059.17	$1059.16 \pm 0.57$
$\ln(10^{10} A_s)$	3.0637	$3.088 \pm 0.024$	$\Omega_\Lambda$	0.7324	$0.732^{+0.021}_{-0.017}$	$r_{\text{drag}}$	147.25	$147.20 \pm 0.57$
$A_{100}^{\text{PS}}$	120	$171 \pm 60$	$\Omega_m$	0.2676	$0.268^{+0.017}_{-0.021}$	$k_D$	0.14029	$0.14033 \pm 0.00063$
$A_{143}^{\text{PS}}$	46.6	$54 \pm 10$	$\sigma_8$	0.8795	$0.893 \pm 0.032$	$100\theta_D$	0.161428	$0.16144 \pm 0.00034$
$A_{217}^{\text{PS}}$	110.4	$108^{+20}_{-20}$	$z_{\text{re}}$	9.87	$10.9 \pm 1.1$	$z_{\text{eq}}$	3417	$3423 \pm 56$
$A_{143}^{\text{CIB}}$	1.12	$< 10.3$	$H_0$	73.27	$73.4 \pm 2.5$	$100\theta_{\text{eq}}$	0.8098	$0.809 \pm 0.010$
$A_{217}^{\text{CIB}}$	25.6	$29^{+6}_{-9}$	$10^9 A_s$	2.141	$2.193 \pm 0.053$	$r_{\text{drag}}/D_V(0.57)$	0.07193	$0.07199 \pm 0.00075$
$A^{\text{tSZ}}_{143}$	9.23	—	$\Omega_m h^2$	0.14365	$0.1439 \pm 0.0024$			
$r_{143 \times 217}^{\text{PS}}$	0.884	$> 0.850$	$\Omega_m h^3$	0.10526	$0.1056 \pm 0.0041$			

Best-fit  $\chi^2_{\text{eff}} = 9808.20$ ; R-1 = 0.02644

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.41 DR7: 0.04 6DF: 0.92 CMB - lowLike: 2015.16 lowl: -6.86 CamSpec: 7797.50 Hubble - HST: 0.21

## 20 yhe

### 20.1 base\_yhe\_planck\_lowl\_lowLike

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022085	$0.02239 \pm 0.00037$	$r_{143 \times 217}^{\text{CIB}}$	0.360	$0.50^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09620	$0.09702 \pm 0.00096$
$\Omega_c h^2$	0.12094	$0.1190 \pm 0.0027$	$\gamma^{\text{CIB}}$	0.532	$0.54 \pm 0.13$	$Y_{\text{P}}$	0.2583	$0.283 \pm 0.024$
$100\theta_{\text{MC}}$	1.04140	$1.0426 \pm 0.0011$	$c_{100}$	1.000583	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8497	$1.849 \pm 0.016$
$\tau$	0.0902	$0.095^{+0.014}_{-0.016}$	$c_{217}$	0.99646	$0.9965 \pm 0.0014$	Age/Gyr	13.815	$13.739 \pm 0.071$
$Y_{\text{He}}$	0.2583	$0.283 \pm 0.024$	$\xi^{\text{tSZ-CIB}}$	0.078	$< 0.612$	$z_*$	1090.91	$1091.42 \pm 0.87$
$n_s$	0.9642	$0.975 \pm 0.013$	$A^{\text{kSZ}}$	1.42	—	$r_*$	144.36	$144.53 \pm 0.60$
$\ln(10^{10} A_s)$	3.0980	$3.108^{+0.028}_{-0.032}$	$\beta_1^1$	0.79	$0.62 \pm 0.57$	$100\theta_*$	1.04128	$1.04179 \pm 0.00066$
$A_{100}^{\text{PS}}$	154	$186 \pm 60$	$\Omega_{\Lambda}$	0.6796	$0.695 \pm 0.017$	$z_{\text{drag}}$	1059.78	$1061.2 \pm 1.5$
$A_{143}^{\text{PS}}$	66.9	$59 \pm 10$	$\Omega_m$	0.3204	$0.305 \pm 0.017$	$r_{\text{drag}}$	147.12	$147.21 \pm 0.61$
$A_{217}^{\text{PS}}$	124.1	$105^{+20}_{-20}$	$\sigma_8$	0.8373	$0.838 \pm 0.015$	$k_{\text{D}}$	0.14007	$0.13918 \pm 0.00087$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.24	$11.7 \pm 1.2$	$100\theta_{\text{D}}$	0.16178	$0.16271 \pm 0.00096$
$A_{217}^{\text{CIB}}$	24.2	$32^{+7}_{-10}$	$H_0$	66.96	$68.3 \pm 1.4$	$z_{\text{eq}}$	3418	$3379 \pm 59$
$A_{143}^{\text{tSZ}}$	6.30	—	$10^9 A_s$	2.215	$2.238^{+0.061}_{-0.074}$	$100\theta_{\text{eq}}$	0.8102	$0.819 \pm 0.012$
$r_{143 \times 217}^{\text{PS}}$	0.892	$> 0.843$	$\Omega_m h^2$	0.14367	$0.1421 \pm 0.0025$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07114	$0.07204 \pm 0.00098$

Best-fit  $\chi_{\text{eff}}^2 = 9805.27$ ; R-1 = 0.00617

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.40 lowl: -7.09 CamSpec: 7797.26

## 20.2 base\_yhe\_planck\_lowl\_lowLike\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022356	$0.02248 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.649	$0.50^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09698	$0.09697 \pm 0.00096$
$\Omega_c h^2$	0.11932	$0.1179 \pm 0.0022$	$\gamma^{\text{CIB}}$	0.511	$0.54 \pm 0.13$	$Y_{\text{P}}$	0.2849	$0.280 \pm 0.023$
$100\theta_{\text{MC}}$	1.04258	$1.0426 \pm 0.0011$	$c_{100}$	1.000584	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8468	$1.843 \pm 0.014$
$\tau$	0.0783	$0.094^{+0.013}_{-0.016}$	$c_{217}$	0.99636	$0.9965 \pm 0.0014$	Age/Gyr	13.746	$13.726 \pm 0.068$
$Y_{\text{He}}$	0.2849	$0.280 \pm 0.023$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.612$	$z_*$	1091.56	$1091.07 \pm 0.84$
$n_s$	0.9703	$0.977 \pm 0.012$	$A^{\text{kSZ}}$	10.0	—	$r_*$	144.47	$144.76 \pm 0.51$
$\ln(10^{10} A_s)$	3.0726	$3.103^{+0.026}_{-0.031}$	$\beta_1^1$	0.56	$0.58 \pm 0.57$	$100\theta_*$	1.04170	$1.04186 \pm 0.00064$
$A_{100}^{\text{PS}}$	151	$183 \pm 60$	$\Omega_{\Lambda}$	0.6935	$0.701 \pm 0.014$	$z_{\text{drag}}$	1061.23	$1061.2 \pm 1.5$
$A_{143}^{\text{PS}}$	26	$56 \pm 10$	$\Omega_m$	0.3065	$0.299 \pm 0.014$	$r_{\text{drag}}$	147.16	$147.42 \pm 0.54$
$A_{217}^{\text{PS}}$	90.1	$103^{+20}_{-20}$	$\sigma_8$	0.8240	$0.832^{+0.012}_{-0.013}$	$k_{\text{D}}$	0.13913	$0.13916 \pm 0.00081$
$A_{143}^{\text{CIB}}$	12.4	—	$z_{\text{re}}$	10.22	$11.5 \pm 1.2$	$100\theta_{\text{D}}$	0.16281	$0.16248 \pm 0.00095$
$A_{217}^{\text{CIB}}$	35.7	$32^{+7}_{-10}$	$H_0$	68.15	$68.8^{+1.2}_{-1.3}$	$z_{\text{eq}}$	3385.3	$3355 \pm 49$
$A^{\text{tSZ}}_{143}$	10.0	—	$10^9 A_s$	2.160	$2.228^{+0.057}_{-0.071}$	$100\theta_{\text{eq}}$	0.8176	$0.8236 \pm 0.0097$
$r_{143 \times 217}^{\text{PS}}$	0.883	$> 0.840$	$\Omega_m h^2$	0.14232	$0.1410 \pm 0.0020$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07191	$0.07239^{+0.00080}_{-0.00090}$

Best-fit  $\chi^2_{\text{eff}} = 9815.31$ ; R-1 = 0.00834

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.83 lensing: 10.08 lowl: -8.40 CamSpec: 7797.91

### 20.3 base\_yhe\_planck\_lowl\_lowLike\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022320	$0.02240 \pm 0.00031$	$r_{143 \times 217}^{\text{CIB}}$	0.583	$0.50^{+0.26}_{-0.21}$	$\Omega_m h^3$	0.09665	$0.09703 \pm 0.00093$
$\Omega_c h^2$	0.11840	$0.1189 \pm 0.0017$	$\gamma^{\text{CIB}}$	0.513	$0.54 \pm 0.13$	$Y_{\text{P}}$	0.2736	$0.283 \pm 0.022$
$100\theta_{\text{MC}}$	1.04236	$1.04265 \pm 0.00096$	$c_{100}$	1.000586	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8389	$1.849 \pm 0.015$
$\tau$	0.0954	$0.095^{+0.013}_{-0.015}$	$c_{217}$	0.99634	$0.9965 \pm 0.0014$	Age/Gyr	13.752	$13.737 \pm 0.055$
$Y_{\text{He}}$	0.2736	$0.283 \pm 0.022$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.611$	$z_*$	1091.03	$1091.40 \pm 0.86$
$n_s$	0.9718	$0.976 \pm 0.010$	$A^{\text{kSZ}}$	6.67	—	$r_*$	144.779	$144.56 \pm 0.49$
$\ln(10^{10} A_s)$	3.1025	$3.107^{+0.028}_{-0.032}$	$\beta_1^1$	0.60	$0.62 \pm 0.57$	$100\theta_*$	1.04180	$1.04180 \pm 0.00058$
$A_{100}^{\text{PS}}$	135	$186 \pm 60$	$\Omega_{\Lambda}$	0.6976	$0.696^{+0.011}_{-0.010}$	$z_{\text{drag}}$	1060.66	$1061.3 \pm 1.4$
$A_{143}^{\text{PS}}$	39.4	$59 \pm 10$	$\Omega_m$	0.3024	$0.304^{+0.010}_{-0.011}$	$r_{\text{drag}}$	147.48	$147.23 \pm 0.54$
$A_{217}^{\text{PS}}$	103.4	$105^{+20}_{-20}$	$\sigma_8$	0.8327	$0.838^{+0.014}_{-0.016}$	$k_{\text{D}}$	0.13925	$0.13915 \pm 0.00074$
$A_{143}^{\text{CIB}}$	6.80	—	$z_{\text{re}}$	11.65	$11.7 \pm 1.2$	$100\theta_{\text{D}}$	0.16234	$0.16271 \pm 0.00094$
$A_{217}^{\text{CIB}}$	31.0	$32^{+7}_{-10}$	$H_0$	68.37	$68.37 \pm 0.86$	$z_{\text{eq}}$	3362.5	$3376 \pm 40$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.225	$2.237^{+0.061}_{-0.073}$	$100\theta_{\text{eq}}$	0.8214	$0.8195 \pm 0.0074$
$r_{143 \times 217}^{\text{PS}}$	0.882	$> 0.843$	$\Omega_m h^2$	0.14137	$0.1419 \pm 0.0017$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07215	$0.07208 \pm 0.00060$

Best-fit  $\chi^2_{\text{eff}} = 9805.71$ ; R-1 = 0.00695

$\chi^2_{\text{eff}}$ : BAO - DR9: 0.68 DR7: 0.55 6DF: 0.06 CMB - lowLike: 2014.48 lowl: -8.14 CamSpec: 7797.21

## 20.4 base\_yhe\_planck\_lowl\_lowLike\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022697	$0.02268 \pm 0.00035$	$r_{143 \times 217}^{\text{CIB}}$	0.634	$0.52^{+0.27}_{-0.19}$	$\Omega_m h^3$	0.09764	$0.09749 \pm 0.00094$
$\Omega_c h^2$	0.11672	$0.1166 \pm 0.0024$	$\gamma^{\text{CIB}}$	0.515	$0.53 \pm 0.13$	$Y_{\text{P}}$	0.3015	$0.295 \pm 0.023$
$100\theta_{\text{MC}}$	1.04361	$1.0434 \pm 0.0010$	$c_{100}$	1.000591	$1.00059 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8455	$1.845 \pm 0.015$
$\tau$	0.0933	$0.101^{+0.014}_{-0.016}$	$c_{217}$	0.99646	$0.9965 \pm 0.0014$	Age/Gyr	13.670	$13.677 \pm 0.065$
$Y_{\text{He}}$	0.3015	$0.295 \pm 0.023$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.603$	$z_*$	1091.62	$1091.35 \pm 0.87$
$n_s$	0.9846	$0.986 \pm 0.012$	$A^{\text{kSZ}}$	10.00	$> 4.04$	$r_*$	144.82	$144.88 \pm 0.57$
$\ln(10^{10} A_s)$	3.1020	$3.117^{+0.030}_{-0.033}$	$\beta_1^1$	0.66	$0.60 \pm 0.57$	$100\theta_*$	1.04224	$1.04220 \pm 0.00062$
$A_{100}^{\text{PS}}$	148	$189 \pm 60$	$\Omega_{\Lambda}$	0.7118	$0.711 \pm 0.014$	$z_{\text{drag}}$	1062.41	$1062.1 \pm 1.4$
$A_{143}^{\text{PS}}$	33.4	$60 \pm 10$	$\Omega_m$	0.2882	$0.289 \pm 0.014$	$r_{\text{drag}}$	147.42	$147.48 \pm 0.59$
$A_{217}^{\text{PS}}$	95.3	$104^{+20}_{-20}$	$\sigma_8$	0.8301	$0.836^{+0.015}_{-0.017}$	$k_{\text{D}}$	0.13842	$0.13862 \pm 0.00082$
$A_{143}^{\text{CIB}}$	10.1	—	$z_{\text{re}}$	11.51	$12.1 \pm 1.3$	$100\theta_{\text{D}}$	0.16334	$0.16304 \pm 0.00095$
$A_{217}^{\text{CIB}}$	34.4	$33^{+8}_{-10}$	$H_0$	69.71	$69.7 \pm 1.2$	$z_{\text{eq}}$	3331	$3329 \pm 53$
$A^{\text{tSZ}}_{143}$	10.0	—	$10^9 A_s$	2.224	$2.260^{+0.065}_{-0.077}$	$100\theta_{\text{eq}}$	0.8292	$0.830 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.872	$> 0.837$	$\Omega_m h^2$	0.14006	$0.1400 \pm 0.0022$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07299	$0.07299 \pm 0.00089$

Best-fit  $\chi^2_{\text{eff}} = 9807.42$ ; R-1 = 0.01502

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.19 lowl: -9.08 CamSpec: 7798.52 Hubble - HST: 2.94

## 20.5 base\_yhe\_planck\_lowl\_lowLike\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022531	$0.02256 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.534	$0.51^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09721	$0.09723 \pm 0.00095$
$\Omega_c h^2$	0.11742	$0.1174 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.529	$0.54 \pm 0.13$	$Y_{\text{P}}$	0.2915	$0.289 \pm 0.023$
$100\theta_{\text{MC}}$	1.04309	$1.0431 \pm 0.0011$	$c_{100}$	1.000592	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8439	$1.845 \pm 0.015$
$\tau$	0.0942	$0.099^{+0.014}_{-0.016}$	$c_{217}$	0.99642	$0.9965 \pm 0.0014$	Age/Gyr	13.705	$13.703 \pm 0.068$
$Y_{\text{He}}$	0.2915	$0.289 \pm 0.023$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.606$	$z_*$	1091.44	$1091.32 \pm 0.86$
$n_s$	0.9800	$0.981 \pm 0.012$	$A^{\text{kSZ}}$	10.00	$> 3.87$	$r_*$	144.80	$144.80 \pm 0.57$
$\ln(10^{10} A_s)$	3.1029	$3.113^{+0.029}_{-0.033}$	$\beta_1^1$	0.64	$0.60 \pm 0.57$	$100\theta_*$	1.04201	$1.04203 \pm 0.00064$
$A_{100}^{\text{PS}}$	148	$187 \pm 60$	$\Omega_{\Lambda}$	0.7059	$0.706 \pm 0.015$	$z_{\text{drag}}$	1061.73	$1061.7 \pm 1.4$
$A_{143}^{\text{PS}}$	37.9	$59 \pm 10$	$\Omega_m$	0.2941	$0.294 \pm 0.015$	$r_{\text{drag}}$	147.45	$147.44 \pm 0.59$
$A_{217}^{\text{PS}}$	99.6	$104^{+20}_{-20}$	$\sigma_8$	0.8318	$0.836^{+0.015}_{-0.016}$	$k_{\text{D}}$	0.13869	$0.13881 \pm 0.00084$
$A_{143}^{\text{CIB}}$	8.10	—	$z_{\text{re}}$	11.59	$11.9 \pm 1.3$	$100\theta_{\text{D}}$	0.16300	$0.16287 \pm 0.00095$
$A_{217}^{\text{CIB}}$	31.7	$33^{+7}_{-10}$	$H_0$	69.14	$69.2 \pm 1.3$	$z_{\text{eq}}$	3344	$3344 \pm 55$
$A_{143}^{\text{tSZ}}$	8.53	—	$10^9 A_s$	2.226	$2.249^{+0.064}_{-0.076}$	$100\theta_{\text{eq}}$	0.8260	$0.826 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.876	$> 0.839$	$\Omega_m h^2$	0.14060	$0.1406 \pm 0.0023$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07263	$0.07266 \pm 0.00093$

Best-fit  $\chi^2_{\text{eff}} = 10232.13$ ; R-1 = 0.00892

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.29 lowl: -8.88 CamSpec: 7797.92 SN - SNLS: 428.07

## 20.6 base\_yhe\_planck\_lowl\_lowLike\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022357	$0.02244 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.532	$0.50^{+0.27}_{-0.21}$	$\Omega_m h^3$	0.09675	$0.09708 \pm 0.00096$
$\Omega_c h^2$	0.11822	$0.1185 \pm 0.0025$	$\gamma^{\text{CIB}}$	0.518	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.2790	$0.285 \pm 0.023$
$100\theta_{\text{MC}}$	1.04251	$1.0428 \pm 0.0011$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8408	$1.848 \pm 0.016$
$\tau$	0.0948	$0.096^{+0.014}_{-0.016}$	$c_{217}$	0.99635	$0.9965 \pm 0.0014$	Age/Gyr	13.743	$13.728 \pm 0.069$
$Y_{\text{He}}$	0.2790	$0.285 \pm 0.023$	$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.610$	$z_*$	1091.20	$1091.39 \pm 0.87$
$n_s$	0.9731	$0.977 \pm 0.012$	$A^{\text{kSZ}}$	10.0	—	$r_*$	144.78	$144.61 \pm 0.58$
$\ln(10^{10} A_s)$	3.1024	$3.109^{+0.029}_{-0.032}$	$\beta_1^1$	0.64	$0.61 \pm 0.57$	$100\theta_*$	1.04180	$1.04186 \pm 0.00065$
$A_{100}^{\text{PS}}$	132	$186 \pm 60$	$\Omega_\Lambda$	0.6991	$0.698 \pm 0.016$	$z_{\text{drag}}$	1060.92	$1061.4 \pm 1.5$
$A_{143}^{\text{PS}}$	38.0	$59 \pm 10$	$\Omega_m$	0.3009	$0.302 \pm 0.016$	$r_{\text{drag}}$	147.47	$147.28 \pm 0.60$
$A_{217}^{\text{PS}}$	101.5	$105^{+20}_{-20}$	$\sigma_8$	0.8325	$0.837 \pm 0.015$	$k_D$	0.13906	$0.13907 \pm 0.00085$
$A_{143}^{\text{CIB}}$	5.77	—	$z_{\text{re}}$	11.63	$11.7 \pm 1.3$	$100\theta_D$	0.16257	$0.16276 \pm 0.00096$
$A_{217}^{\text{CIB}}$	29.8	$32^{+7}_{-10}$	$H_0$	68.51	$68.6 \pm 1.3$	$z_{\text{eq}}$	3359	$3369 \pm 56$
$A^{\text{tSZ}}_{143}$	9.37	—	$10^9 A_s$	2.225	$2.241^{+0.062}_{-0.075}$	$100\theta_{\text{eq}}$	0.8223	$0.821 \pm 0.011$
$r_{143 \times 217}^{\text{PS}}$	0.880	$> 0.841$	$\Omega_m h^2$	0.14122	$0.1416 \pm 0.0024$	$r_{\text{drag}}/D_V(0.57)$	0.07224	$0.07222 \pm 0.00093$

Best-fit  $\chi^2_{\text{eff}} = 9934.36$ ; R-1 = 0.00591

$\chi^2_{\text{eff}}$ : CMB - lowLike: 2014.42 lowl: -8.29 CamSpec: 7797.23 SN - Union2.1: 130.18

## 20.7 base\_yhe\_planck\_lowl\_lowLike\_highL

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022187	$0.02227 \pm 0.00036$	$\beta_1^1$	0.48	$0.45 \pm 0.55$	$\sigma_8$	0.8351	$0.833 \pm 0.014$
$\Omega_c h^2$	0.12003	$0.1194 \pm 0.0027$	$A_{148}^{\text{PS, ACT}}$	10.42	$10.48 \pm 0.59$	$z_{\text{re}}$	11.54	$11.5 \pm 1.2$
$100\theta_{\text{MC}}$	1.04172	$1.0420 \pm 0.0010$	$A_{218}^{\text{PS, ACT}}$	76.62	$76.6 \pm 4.5$	$H_0$	67.47	$67.9 \pm 1.3$
$\tau$	0.0940	$0.094^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.35	$7.49^{+1.3}_{-1.6}$	$10^9 A_s$	2.222	$2.221^{+0.059}_{-0.070}$
$Y_{\text{He}}$	0.2612	$0.266 \pm 0.021$	$A_{150}^{\text{PS, SPT}}$	9.90	$9.96 \pm 0.52$	$\Omega_m h^2$	0.14286	$0.1424 \pm 0.0025$
$n_s$	0.9634	$0.967 \pm 0.012$	$A_{220}^{\text{PS, SPT}}$	73.59	$74.0 \pm 4.5$	$\Omega_m h^3$	0.09639	$0.09657 \pm 0.00090$
$\ln(10^{10} A_s)$	3.1011	$3.100^{+0.027}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.799	$0.835^{+0.11}_{-0.090}$	$Y_{\text{P}}$	0.2612	$0.266 \pm 0.021$
$A_{100}^{\text{PS}}$	213	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.566	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8412	$1.841 \pm 0.015$
$A_{143}^{\text{PS}}$	76.1	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9194	$0.938 \pm 0.023$	Age/Gyr	13.791	$13.771 \pm 0.068$
$A_{217}^{\text{PS}}$	63.2	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	$z_*$	1090.82	$1090.87 \pm 0.74$
$A_{143}^{\text{CIB}}$	3.04	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.85 \pm 0.20$	$r_*$	144.50	$144.58 \pm 0.60$
$A_{217}^{\text{CIB}}$	50.3	$49.1^{+4.8}_{-5.3}$	$y_{148}^{\text{ACTs}}$	0.9901	$0.9903 \pm 0.0076$	$100\theta_*$	1.04151	$1.04165 \pm 0.00065$
$A_{143}^{\text{tSZ}}$	3.60	$2.43^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0021	$1.003 \pm 0.014$	$z_{\text{drag}}$	1060.05	$1060.4 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.818	$0.828 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9862	$0.9864 \pm 0.0075$	$r_{\text{drag}}$	147.24	$147.29 \pm 0.61$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.933$	$y_{217}^{\text{ACTe}}$	0.9606	$0.962 \pm 0.011$	$k_{\text{D}}$	0.13992	$0.13973 \pm 0.00079$
$\gamma^{\text{CIB}}$	0.635	$0.630 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9799	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16183	$0.16200 \pm 0.00079$
$c_{100}$	1.000584	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9824	$0.984 \pm 0.010$	$z_{\text{eq}}$	3398	$3386 \pm 60$
$c_{217}$	0.99742	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0162	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8141	$0.817 \pm 0.012$
$\xi^{\text{tSZ-CIB}}$	0.117	$< 0.457$	$\Omega_{\Lambda}$	0.6862	$0.690^{+0.019}_{-0.017}$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07150	$0.07177 \pm 0.00097$
$A^{\text{kSZ}}$	3.81	$5.70^{+2.8}_{-1.8}$	$\Omega_{\text{m}}$	0.3138	$0.310 \pm 0.017$			

Best-fit  $\chi_{\text{eff}}^2 = 10508.29$ ; R-1 =0.00720

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.53 lowl: -6.86 CamSpec: 7806.94 highL: 693.50



## 20.8 base\_yhe\_planck\_lowl\_lowLike\_highL\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022302	$0.02237^{+0.00034}_{-0.00039}$	$\beta_1^1$	0.39	$0.43 \pm 0.55$	$\sigma_8$	0.8300	$0.829^{+0.011}_{-0.013}$
$\Omega_c h^2$	0.11834	$0.1183 \pm 0.0022$	$A_{148}^{\text{PS, ACT}}$	10.39	$10.62 \pm 0.59$	$z_{\text{re}}$	11.57	$11.4 \pm 1.2$
$100\theta_{\text{MC}}$	1.04171	$1.04208 \pm 0.00098$	$A_{218}^{\text{PS, ACT}}$	76.17	$76.7 \pm 4.5$	$H_0$	68.16	$68.4 \pm 1.2$
$\tau$	0.0957	$0.093^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.50	$7.71^{+1.3}_{-1.7}$	$10^9 A_s$	2.219	$2.214^{+0.056}_{-0.068}$
$Y_{\text{He}}$	0.2576	$0.265 \pm 0.021$	$A_{150}^{\text{PS, SPT}}$	9.90	$10.11 \pm 0.51$	$\Omega_m h^2$	0.14129	$0.1413 \pm 0.0021$
$n_s$	0.9666	$0.969 \pm 0.012$	$A_{220}^{\text{PS, SPT}}$	73.19	$74.2 \pm 4.5$	$\Omega_m h^3$	0.09630	$0.09659 \pm 0.00090$
$\ln(10^{10} A_s)$	3.0998	$3.097^{+0.026}_{-0.030}$	$r_{95 \times 150}^{\text{PS}}$	0.798	$0.835 \pm 0.089$	$Y_p$	0.2576	$0.265 \pm 0.021$
$A_{100}^{\text{PS}}$	201	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.545	$0.59^{+0.11}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8328	$1.836 \pm 0.013$
$A_{143}^{\text{PS}}$	74.0	$76 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9086	$0.935^{+0.023}_{-0.026}$	Age/Gyr	13.773	$13.755 \pm 0.066$
$A_{217}^{\text{PS}}$	61.6	$62 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.440	$0.43 \pm 0.19$	$z_*$	1090.37	$1090.62 \pm 0.70$
$A_{143}^{\text{CIB}}$	3.22	$3.25^{+0.79}_{-0.87}$	$A_{\text{dust}}^{\text{ACTe}}$	0.830	$0.85 \pm 0.19$	$r_*$	144.87	$144.80 \pm 0.51$
$A_{217}^{\text{CIB}}$	52.3	$49.6^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9912	$0.9909 \pm 0.0073$	$100\theta_*$	1.04159	$1.04173 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	4.58	$2.43^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0023	$1.004 \pm 0.014$	$z_{\text{drag}}$	1060.09	$1060.5 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.830 \pm 0.068$	$y_{148}^{\text{ACTe}}$	0.9871	$0.9871 \pm 0.0074$	$r_{\text{drag}}$	147.57	$147.48 \pm 0.53$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.932$	$y_{217}^{\text{ACTe}}$	0.9609	$0.963 \pm 0.011$	$k_D$	0.13981	$0.13963 \pm 0.00074$
$\gamma^{\text{CIB}}$	0.656	$0.635 \pm 0.081$	$y_{95}^{\text{SPT}}$	0.9825	$0.982^{+0.019}_{-0.021}$	$100\theta_D$	0.16156	$0.16188 \pm 0.00079$
$c_{100}$	1.000604	$1.00059 \pm 0.00041$	$y_{150}^{\text{SPT}}$	0.9841	$0.986 \pm 0.010$	$z_{\text{eq}}$	3360.7	$3362 \pm 50$
$c_{217}$	0.99737	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0169	$1.023 \pm 0.024$	$100\theta_{\text{eq}}$	0.8212	$0.8217 \pm 0.0099$
$\xi^{\text{tSZ-CIB}}$	0.000	$< 0.437$	$\Omega_\Lambda$	0.6958	$0.697^{+0.016}_{-0.014}$	$r_{\text{drag}}/D_V(0.57)$	0.07203	$0.07214 \pm 0.00085$
$A^{\text{kSZ}}$	1.30	$5.07^{+2.7}_{-1.9}$	$\Omega_m$	0.3042	$0.303^{+0.014}_{-0.016}$			

Best-fit  $\chi_{\text{eff}}^2 = 10516.97$ ; R-1 =0.02289

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.53 lensing: 9.63 lowl: -7.43 CamSpec: 7807.97 highL: 692.15

## 20.9 base\_yhe\_planck\_lowl\_lowLike\_highL\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022270	$0.02232 \pm 0.00030$	$\beta_1$	0.45	$0.44 \pm 0.55$	$\sigma_8$	0.8314	$0.832^{+0.013}_{-0.015}$
$\Omega_c h^2$	0.11889	$0.1188 \pm 0.0017$	$A_{148}^{\text{PS, ACT}}$	10.21	$10.48 \pm 0.59$	$z_{\text{re}}$	11.53	$11.5 \pm 1.2$
$100\theta_{\text{MC}}$	1.04190	$1.04212 \pm 0.00087$	$A_{218}^{\text{PS, ACT}}$	75.79	$76.6 \pm 4.4$	$H_0$	68.00	$68.14 \pm 0.85$
$\tau$	0.0946	$0.095^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.18	$7.50^{+1.3}_{-1.7}$	$10^9 A_s$	2.219	$2.223^{+0.059}_{-0.069}$
$Y_{\text{He}}$	0.2615	$0.267 \pm 0.020$	$A_{150}^{\text{PS, SPT}}$	9.65	$9.95 \pm 0.51$	$\Omega_m h^2$	0.14180	$0.1418 \pm 0.0017$
$n_s$	0.9666	$0.9685 \pm 0.0097$	$A_{220}^{\text{PS, SPT}}$	72.51	$74.0 \pm 4.5$	$\Omega_m h^3$	0.09642	$0.09662 \pm 0.00087$
$\ln(10^{10} A_s)$	3.0996	$3.101^{+0.027}_{-0.030}$	$r_{95 \times 150}^{\text{PS}}$	0.802	$0.835^{+0.11}_{-0.090}$	$Y_{\text{P}}$	0.2615	$0.267 \pm 0.020$
$A_{100}^{\text{PS}}$	204	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.559	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8365	$1.839 \pm 0.014$
$A_{143}^{\text{PS}}$	74.9	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9125	$0.938 \pm 0.023$	Age/Gyr	13.773	$13.761 \pm 0.053$
$A_{217}^{\text{PS}}$	62.9	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.434	$0.44 \pm 0.19$	$z_*$	1090.62	$1090.81 \pm 0.73$
$A_{143}^{\text{CIB}}$	3.29	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.837	$0.85 \pm 0.20$	$r_*$	144.735	$144.69 \pm 0.48$
$A_{217}^{\text{CIB}}$	52.3	$49.1^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9905	$0.9903 \pm 0.0075$	$100\theta_*$	1.04167	$1.04173 \pm 0.00057$
$A_{143}^{\text{tSZ}}$	4.75	$2.42^{+1.0}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0011	$1.003 \pm 0.014$	$z_{\text{drag}}$	1060.16	$1060.5 \pm 1.2$
$r_{143 \times 217}^{\text{PS}}$	0.827	$0.828 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9859	$0.9864 \pm 0.0074$	$r_{\text{drag}}$	147.45	$147.38 \pm 0.53$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9590	$0.962 \pm 0.011$	$k_{\text{D}}$	0.13975	$0.13961 \pm 0.00066$
$\gamma^{\text{CIB}}$	0.653	$0.629 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9807	$0.980 \pm 0.020$	$100\theta_{\text{D}}$	0.16179	$0.16202 \pm 0.00079$
$c_{100}$	1.000584	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9822	$0.984 \pm 0.010$	$z_{\text{eq}}$	3373.0	$3373 \pm 40$
$c_{217}$	0.99738	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0141	$1.021 \pm 0.024$	$100\theta_{\text{eq}}$	0.8190	$0.8194 \pm 0.0075$
$\xi^{\text{tSZ-CIB}}$	0.008	$< 0.457$	$\Omega_{\Lambda}$	0.6933	$0.694 \pm 0.011$	$r_{\text{drag}}/D_{\text{V}}(0.57)$	0.07190	$0.07197 \pm 0.00060$
$A^{\text{kSZ}}$	1.78	$5.73^{+2.8}_{-1.8}$	$\Omega_{\text{m}}$	0.3067	$0.306 \pm 0.011$			

Best-fit  $\chi_{\text{eff}}^2 = 10509.93$ ; R-1 = 0.01144

$\chi_{\text{eff}}^2$ : BAO - DR7: 0.96 DR9: 0.37 6DF: 0.03 CMB - lowLike: 2014.47 lowl: -7.46 CamSpec: 7807.14 highL: 694.30

## 20.10 base\_yhe\_planck\_lowl\_lowLike\_highL\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022515	$0.02257 \pm 0.00034$	$\beta_1^1$	0.44	$0.44 \pm 0.56$	$\sigma_8$	0.8268	$0.831 \pm 0.015$
$\Omega_c h^2$	0.11704	$0.1168 \pm 0.0024$	$A_{148}^{\text{PS, ACT}}$	10.47	$10.47 \pm 0.59$	$z_{\text{re}}$	11.52	$11.9 \pm 1.2$
$100\theta_{\text{MC}}$	1.04259	$1.04275 \pm 0.00095$	$A_{218}^{\text{PS, ACT}}$	76.65	$76.6 \pm 4.4$	$H_0$	69.09	$69.3 \pm 1.2$
$\tau$	0.0949	$0.100^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.22	$7.47^{+1.3}_{-1.7}$	$10^9 A_s$	2.218	$2.244^{+0.065}_{-0.074}$
$Y_{\text{He}}$	0.2736	$0.277 \pm 0.020$	$A_{150}^{\text{PS, SPT}}$	9.90	$9.93 \pm 0.51$	$\Omega_m h^2$	0.14020	$0.1401 \pm 0.0022$
$n_s$	0.9749	$0.977 \pm 0.011$	$A_{220}^{\text{PS, SPT}}$	73.72	$73.9 \pm 4.4$	$\Omega_m h^3$	0.09687	$0.09701 \pm 0.00089$
$\ln(10^{10} A_s)$	3.0992	$3.110 \pm 0.030$	$r_{95 \times 150}^{\text{PS}}$	0.814	$0.837^{+0.11}_{-0.087}$	$Y_P$	0.2736	$0.277 \pm 0.020$
$A_{100}^{\text{PS}}$	215	$220 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.589	$0.60^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8345	$1.835 \pm 0.015$
$A_{143}^{\text{PS}}$	77.6	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9217	$0.939 \pm 0.023$	Age/Gyr	13.720	$13.708 \pm 0.063$
$A_{217}^{\text{PS}}$	64.1	$64 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.433	$0.43 \pm 0.19$	$z_*$	1090.65	$1090.71 \pm 0.73$
$A_{143}^{\text{CIB}}$	3.11	$3.24 \pm 0.80$	$A_{\text{dust}}^{\text{ACTe}}$	0.846	$0.85 \pm 0.20$	$r_*$	144.99	$144.99 \pm 0.56$
$A_{217}^{\text{CIB}}$	49.89	$49.0^{+4.6}_{-5.3}$	$y_{148}^{\text{ACTs}}$	0.9896	$0.9900 \pm 0.0075$	$100\theta_*$	1.04202	$1.04208 \pm 0.00063$
$A_{143}^{\text{tSZ}}$	3.39	$2.38^{+0.99}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0018	$1.003 \pm 0.013$	$z_{\text{drag}}$	1061.00	$1061.2 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.822	$0.829 \pm 0.066$	$y_{148}^{\text{ACTe}}$	0.9857	$0.9860 \pm 0.0075$	$r_{\text{drag}}$	147.63	$147.61 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.935$	$y_{217}^{\text{ACTe}}$	0.9603	$0.961 \pm 0.010$	$k_D$	0.13925	$0.13917 \pm 0.00075$
$\gamma^{\text{CIB}}$	0.627	$0.626 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9777	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.16214	$0.16226 \pm 0.00079$
$c_{100}$	1.000595	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9814	$0.983 \pm 0.010$	$z_{\text{eq}}$	3335	$3331 \pm 53$
$c_{217}$	0.99743	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0164	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8273	$0.828 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.172	$< 0.481$	$\Omega_\Lambda$	0.7063	$0.708 \pm 0.014$	$r_{\text{drag}}/D_V(0.57)$	0.07266	$0.07278 \pm 0.00088$
$A^{\text{kSZ}}$	4.37	$5.87^{+2.8}_{-1.7}$	$\Omega_m$	0.2937	$0.292 \pm 0.014$			

Best-fit  $\chi_{\text{eff}}^2 = 10512.92$ ; R-1 = 0.01787

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.31 lowl: -8.51 CamSpec: 7808.51 highL: 694.54 Hubble - HST: 3.86

## 20.11 base\_yhe\_planck\_lowl\_lowLike\_highL\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022346	$0.02244 \pm 0.00035$	$\beta_1^1$	0.43	$0.44 \pm 0.56$	$\sigma_8$	0.8295	$0.831 \pm 0.014$
$\Omega_c h^2$	0.11813	$0.1177 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.27	$10.48 \pm 0.59$	$z_{\text{re}}$	11.57	$11.7 \pm 1.2$
$100\theta_{\text{MC}}$	1.04207	$1.04241 \pm 0.00098$	$A_{218}^{\text{PS, ACT}}$	76.20	$76.6 \pm 4.4$	$H_0$	68.39	$68.8 \pm 1.3$
$\tau$	0.0954	$0.098^{+0.014}_{-0.016}$	$A_{95}^{\text{PS, SPT}}$	7.30	$7.49^{+1.3}_{-1.7}$	$10^9 A_s$	2.220	$2.233^{+0.062}_{-0.073}$
$Y_{\text{He}}$	0.2643	$0.271 \pm 0.021$	$A_{150}^{\text{PS, SPT}}$	9.74	$9.95 \pm 0.51$	$\Omega_m h^2$	0.14112	$0.1408 \pm 0.0023$
$n_s$	0.9691	$0.973 \pm 0.012$	$A_{220}^{\text{PS, SPT}}$	72.95	$74.0 \pm 4.4$	$\Omega_m h^3$	0.09651	$0.09676 \pm 0.00090$
$\ln(10^{10} A_s)$	3.1001	$3.105^{+0.029}_{-0.032}$	$r_{95 \times 150}^{\text{PS}}$	0.789	$0.836^{+0.11}_{-0.088}$	$Y_P$	0.2643	$0.271 \pm 0.021$
$A_{100}^{\text{PS}}$	208	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.544	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8346	$1.836 \pm 0.015$
$A_{143}^{\text{PS}}$	75.5	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9139	$0.938 \pm 0.023$	Age/Gyr	13.757	$13.735 \pm 0.066$
$A_{217}^{\text{PS}}$	63.0	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.423	$0.44 \pm 0.19$	$z_*$	1090.57	$1090.72 \pm 0.73$
$A_{143}^{\text{CIB}}$	3.10	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.847	$0.85 \pm 0.20$	$r_*$	144.87	$144.88 \pm 0.57$
$A_{217}^{\text{CIB}}$	51.4	$49.1^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9901	$0.9903 \pm 0.0075$	$100\theta_*$	1.04177	$1.04190 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	4.19	$2.40^{+0.99}_{-1.8}$	$y_{217}^{\text{ACTs}}$	1.0018	$1.003 \pm 0.013$	$z_{\text{drag}}$	1060.39	$1060.8 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.823	$0.828 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9859	$0.9863 \pm 0.0075$	$r_{\text{drag}}$	147.56	$147.55 \pm 0.59$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9601	$0.962 \pm 0.011$	$k_D$	0.13958	$0.13936 \pm 0.00077$
$\gamma^{\text{CIB}}$	0.646	$0.628 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9800	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.16185	$0.16212 \pm 0.00080$
$c_{100}$	1.000593	$1.00059 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9816	$0.984 \pm 0.010$	$z_{\text{eq}}$	3357	$3349 \pm 55$
$c_{217}$	0.99740	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0138	$1.021 \pm 0.023$	$100\theta_{\text{eq}}$	0.8224	$0.825 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.030	$< 0.469$	$\Omega_\Lambda$	0.6983	$0.702^{+0.016}_{-0.015}$	$r_{\text{drag}}/D_V(0.57)$	0.07218	$0.07242 \pm 0.00091$
$A^{\text{kSZ}}$	2.71	$5.79^{+2.8}_{-1.8}$	$\Omega_m$	0.3017	$0.298 \pm 0.015$			

Best-fit  $\chi_{\text{eff}}^2 = 10937.26$ ; R-1 = 0.01093

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.46 lowl: -7.82 CamSpec: 7807.66 highL: 694.14 SN - SNLS: 428.68

## 20.12 base\_yhe\_planck\_lowl\_lowLike\_highL\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022235	$0.02233 \pm 0.00035$	$\beta_1^1$	0.39	$0.44 \pm 0.55$	$\sigma_8$	0.8335	$0.833 \pm 0.014$
$\Omega_c h^2$	0.11930	$0.1189 \pm 0.0025$	$A_{148}^{\text{PS, ACT}}$	10.63	$10.48 \pm 0.59$	$z_{\text{re}}$	11.61	$11.6 \pm 1.2$
$100\theta_{\text{MC}}$	1.04190	$1.04214 \pm 0.00098$	$A_{218}^{\text{PS, ACT}}$	77.23	$76.6 \pm 4.4$	$H_0$	67.82	$68.2 \pm 1.3$
$\tau$	0.0951	$0.095^{+0.013}_{-0.015}$	$A_{95}^{\text{PS, SPT}}$	7.29	$7.50^{+1.3}_{-1.7}$	$10^9 A_s$	2.224	$2.224^{+0.060}_{-0.071}$
$Y_{\text{He}}$	0.2640	$0.268 \pm 0.021$	$A_{150}^{\text{PS, SPT}}$	10.08	$9.95 \pm 0.51$	$\Omega_m h^2$	0.14218	$0.1418 \pm 0.0024$
$n_s$	0.9654	$0.969 \pm 0.012$	$A_{220}^{\text{PS, SPT}}$	74.53	$74.0 \pm 4.5$	$\Omega_m h^3$	0.09643	$0.09663 \pm 0.00090$
$\ln(10^{10} A_s)$	3.1018	$3.102^{+0.028}_{-0.031}$	$r_{95 \times 150}^{\text{PS}}$	0.820	$0.835^{+0.11}_{-0.090}$	$Y_P$	0.2640	$0.268 \pm 0.021$
$A_{100}^{\text{PS}}$	215	$219 \pm 50$	$r_{95 \times 220}^{\text{PS}}$	0.604	$0.59^{+0.12}_{-0.13}$	$10^9 A_s e^{-2\tau}$	1.8386	$1.839 \pm 0.015$
$A_{143}^{\text{PS}}$	76.8	$77 \pm 9$	$r_{150 \times 220}^{\text{PS}}$	0.9267	$0.938 \pm 0.023$	Age/Gyr	13.778	$13.760 \pm 0.066$
$A_{217}^{\text{PS}}$	63.0	$63 \pm 10$	$A_{\text{dust}}^{\text{ACTs}}$	0.428	$0.44 \pm 0.19$	$z_*$	1090.80	$1090.82 \pm 0.74$
$A_{143}^{\text{CIB}}$	3.03	$3.24 \pm 0.81$	$A_{\text{dust}}^{\text{ACTe}}$	0.849	$0.85 \pm 0.20$	$r_*$	144.65	$144.68 \pm 0.58$
$A_{217}^{\text{CIB}}$	49.0	$49.1^{+4.7}_{-5.4}$	$y_{148}^{\text{ACTs}}$	0.9898	$0.9903 \pm 0.0075$	$100\theta_*$	1.04162	$1.04173 \pm 0.00064$
$A_{143}^{\text{tSZ}}$	2.76	$2.42^{+1.0}_{-1.9}$	$y_{217}^{\text{ACTs}}$	1.0034	$1.003 \pm 0.014$	$z_{\text{drag}}$	1060.20	$1060.5 \pm 1.3$
$r_{143 \times 217}^{\text{PS}}$	0.820	$0.828 \pm 0.067$	$y_{148}^{\text{ACTe}}$	0.9863	$0.9864 \pm 0.0075$	$r_{\text{drag}}$	147.37	$147.38 \pm 0.60$
$r_{143 \times 217}^{\text{CIB}}$	1.0000	$> 0.934$	$y_{217}^{\text{ACTe}}$	0.9621	$0.962 \pm 0.011$	$k_D$	0.13970	$0.13961 \pm 0.00077$
$\gamma^{\text{CIB}}$	0.616	$0.629 \pm 0.082$	$y_{95}^{\text{SPT}}$	0.9779	$0.980^{+0.019}_{-0.021}$	$100\theta_D$	0.16194	$0.16204 \pm 0.00080$
$c_{100}$	1.000598	$1.00058 \pm 0.00040$	$y_{150}^{\text{SPT}}$	0.9830	$0.984 \pm 0.010$	$z_{\text{eq}}$	3382	$3374 \pm 57$
$c_{217}$	0.99743	$0.9974 \pm 0.0013$	$y_{220}^{\text{SPT}}$	1.0194	$1.021 \pm 0.024$	$100\theta_{\text{eq}}$	0.8173	$0.819 \pm 0.011$
$\xi^{\text{tSZ-CIB}}$	0.283	$< 0.459$	$\Omega_\Lambda$	0.6909	$0.694 \pm 0.016$	$r_{\text{drag}}/D_V(0.57)$	0.07176	$0.07198 \pm 0.00092$
$A^{\text{kSZ}}$	5.48	$5.73^{+2.8}_{-1.8}$	$\Omega_m$	0.3091	$0.306 \pm 0.016$			

Best-fit  $\chi_{\text{eff}}^2 = 10638.70$ ; R-1 =0.00861

$\chi_{\text{eff}}^2$ : CMB - lowLike: 2014.55 lowl: -7.20 CamSpec: 7807.42 highL: 693.29 SN - Union2.1: 130.38

## 20.13 base\_yhe\_planck\_lowl

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02235	$0.02345^{+0.00075}_{-0.00087}$	$r_{143 \times 217}^{\text{CIB}}$	0.648	$0.49^{+0.27}_{-0.23}$	$\Omega_m h^3$	0.09699	$0.0990^{+0.0016}_{-0.0018}$
$\Omega_c h^2$	0.11945	$0.1127 \pm 0.0046$	$\gamma^{\text{CIB}}$	0.508	$0.54 \pm 0.13$	$Y_P$	0.2826	$0.330 \pm 0.037$
$100\theta_{\text{MC}}$	1.04256	$1.0452^{+0.0020}_{-0.0022}$	$c_{100}$	1.000582	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8498	$1.844 \pm 0.016$
$\tau$	0.091	$0.203^{+0.072}_{-0.064}$	$c_{217}$	0.99648	$0.9965 \pm 0.0014$	Age/Gyr	13.747	$13.53^{+0.17}_{-0.15}$
$Y_{\text{He}}$	0.2826	$0.330 \pm 0.037$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.47	$1091.68 \pm 0.90$
$n_s$	0.9736	$1.019^{+0.029}_{-0.036}$	$A^{\text{kSZ}}$	1.56	—	$r_*$	144.45	$145.20 \pm 0.71$
$\ln(10^{10} A_s)$	3.100	$3.32^{+0.14}_{-0.13}$	$\beta_1^1$	0.65	$0.54 \pm 0.57$	$100\theta_*$	1.04173	$1.04296 \pm 0.00099$
$A_{100}^{\text{PS}}$	160	$178 \pm 60$	$\Omega_\Lambda$	0.6927	$0.737^{+0.033}_{-0.027}$	$z_{\text{drag}}$	1061.15	$1064.9^{+2.7}_{-3.2}$
$A_{143}^{\text{PS}}$	45.1	$61 \pm 10$	$\Omega_m$	0.3073	$0.263^{+0.027}_{-0.033}$	$r_{\text{drag}}$	147.14	$147.58 \pm 0.64$
$A_{217}^{\text{PS}}$	106.3	$108^{+20}_{-20}$	$\sigma_8$	0.836	$0.920 \pm 0.051$	$k_D$	0.13925	$0.1375 \pm 0.0014$
$A_{143}^{\text{CIB}}$	10.5	$< 12.1$	$z_{\text{re}}$	11.36	$19.4^{+5.1}_{-3.6}$	$100\theta_D$	0.16270	$0.1642^{+0.0013}_{-0.0015}$
$A_{217}^{\text{CIB}}$	34.8	$32^{+7}_{-10}$	$H_0$	68.09	$72.4^{+2.9}_{-3.3}$	$z_{\text{eq}}$	3388	$3254 \pm 95$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.219	$2.79^{+0.34}_{-0.40}$	$100\theta_{\text{eq}}$	0.8170	$0.848 \pm 0.022$
$r_{143 \times 217}^{\text{PS}}$	0.868	$> 0.850$	$\Omega_m h^2$	0.14245	$0.1368 \pm 0.0040$	$r_{\text{drag}}/D_V(0.57)$	0.07186	$0.0748^{+0.0020}_{-0.0023}$

Best-fit  $\chi^2_{\text{eff}} = 7789.73$ ; R-1 = 0.00643

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.41 CamSpec: 7797.21

## 20.14 base\_yhe\_planck\_lowl\_post\_lensing

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02232	$0.02297^{+0.00053}_{-0.00073}$	$r_{143 \times 217}^{\text{CIB}}$	0.510	$0.52^{+0.27}_{-0.20}$	$\Omega_m h^3$	0.09635	$0.0978^{+0.0012}_{-0.0014}$
$\Omega_c h^2$	0.11826	$0.1144 \pm 0.0043$	$\gamma^{\text{CIB}}$	0.555	$0.53 \pm 0.13$	$Y_P$	0.2581	$0.300^{+0.030}_{-0.034}$
$100\theta_{\text{MC}}$	1.04180	$1.0438^{+0.0015}_{-0.0018}$	$c_{100}$	1.000588	$1.00059 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8379	$1.837 \pm 0.016$
$\tau$	0.093	$0.139^{+0.046}_{-0.056}$	$c_{217}$	0.99640	$0.9965 \pm 0.0014$	Age/Gyr	13.769	$13.62^{+0.15}_{-0.11}$
$Y_{\text{He}}$	0.2581	$0.300^{+0.030}_{-0.034}$	$\xi^{\text{tSZ-CIB}}$	0.168	$< 0.594$	$z_*$	1090.36	$1091.04 \pm 0.87$
$n_s$	0.9710	$0.996^{+0.020}_{-0.028}$	$A^{\text{kSZ}}$	1.20	—	$r_*$	144.87	$145.24 \pm 0.71$
$\ln(10^{10} A_s)$	3.097	$3.189^{+0.087}_{-0.11}$	$\beta_1^1$	0.68	$0.49 \pm 0.57$	$100\theta_*$	1.04165	$1.04246 \pm 0.00089$
$A_{100}^{\text{PS}}$	155	$180 \pm 60$	$\Omega_\Lambda$	0.6966	$0.724 \pm 0.027$	$z_{\text{drag}}$	1060.12	$1062.8^{+1.9}_{-2.5}$
$A_{143}^{\text{PS}}$	65.3	$56 \pm 10$	$\Omega_m$	0.3034	$0.276 \pm 0.027$	$r_{\text{drag}}$	147.57	$147.76 \pm 0.65$
$A_{217}^{\text{PS}}$	119.7	$102^{+20}_{-20}$	$\sigma_8$	0.8300	$0.860^{+0.030}_{-0.037}$	$k_D$	0.13980	$0.1383^{+0.0013}_{-0.0012}$
$A_{143}^{\text{CIB}}$	0.0	—	$z_{\text{re}}$	11.34	$14.8 \pm 3.7$	$100\theta_D$	0.16157	$0.1631^{+0.0011}_{-0.0013}$
$A_{217}^{\text{CIB}}$	25.1	$33^{+7}_{-10}$	$H_0$	68.23	$70.9^{+2.2}_{-2.9}$	$z_{\text{eq}}$	3359	$3282 \pm 89$
$A_{143}^{\text{tSZ}}$	5.87	—	$10^9 A_s$	2.213	$2.44^{+0.19}_{-0.28}$	$100\theta_{\text{eq}}$	0.8216	$0.840^{+0.018}_{-0.022}$
$r_{143 \times 217}^{\text{PS}}$	0.912	$> 0.834$	$\Omega_m h^2$	0.14122	$0.1380 \pm 0.0037$	$r_{\text{drag}}/D_V(0.57)$	0.07208	$0.0739^{+0.0016}_{-0.0021}$

Best-fit  $\chi^2_{\text{eff}} = 7800.86$ ; R-1 = 0.02142

$\chi^2_{\text{eff}}$ : CMB - lensing: 9.82 lowl: -8.13 CamSpec: 7798.65

## 20.15 base\_yhe\_planck\_lowl\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022315	$0.02261 \pm 0.00036$	$r_{143 \times 217}^{\text{CIB}}$	0.577	$0.49^{+0.27}_{-0.23}$	$\Omega_m h^3$	0.09664	$0.0975 \pm 0.0010$
$\Omega_c h^2$	0.11842	$0.1181 \pm 0.0019$	$\gamma^{\text{CIB}}$	0.513	$0.54 \pm 0.13$	$Y_P$	0.2758	$0.293 \pm 0.024$
$100\theta_{\text{MC}}$	1.04236	$1.0431 \pm 0.0010$	$c_{100}$	1.000588	$1.00057 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8398	$1.850 \pm 0.015$
$\tau$	0.0954	$0.133^{+0.043}_{-0.037}$	$c_{217}$	0.99635	$0.9965 \pm 0.0014$	Age/Gyr	13.753	$13.699 \pm 0.065$
$Y_{\text{He}}$	0.2758	$0.293 \pm 0.024$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.13	$1091.53 \pm 0.87$
$n_s$	0.9718	$0.985^{+0.013}_{-0.014}$	$A^{\text{kSZ}}$	8.16	—	$r_*$	144.771	$144.56 \pm 0.49$
$\ln(10^{10} A_s)$	3.103	$3.184^{+0.088}_{-0.074}$	$\beta_1^1$	0.62	$0.60 \pm 0.57$	$100\theta_*$	1.04174	$1.04197 \pm 0.00060$
$A_{100}^{\text{PS}}$	132	$182 \pm 60$	$\Omega_\Lambda$	0.6974	$0.703 \pm 0.012$	$z_{\text{drag}}$	1060.73	$1062.0 \pm 1.5$
$A_{143}^{\text{PS}}$	38.4	$60 \pm 10$	$\Omega_m$	0.3026	$0.297 \pm 0.012$	$r_{\text{drag}}$	147.48	$147.17 \pm 0.54$
$A_{217}^{\text{PS}}$	102.3	$107^{+20}_{-20}$	$\sigma_8$	0.8331	$0.871 \pm 0.035$	$k_D$	0.13916	$0.13893 \pm 0.00077$
$A_{143}^{\text{CIB}}$	6.34	$< 12.1$	$z_{\text{re}}$	11.67	$14.6^{+3.6}_{-2.6}$	$100\theta_D$	0.16245	$0.16300 \pm 0.00097$
$A_{217}^{\text{CIB}}$	30.6	$32^{+7}_{-10}$	$H_0$	68.36	$69.0 \pm 1.0$	$z_{\text{eq}}$	3362.8	$3363 \pm 42$
$A^{\text{tSZ}}_{143}$	9.99	—	$10^9 A_s$	2.227	$2.42 \pm 0.19$	$100\theta_{\text{eq}}$	0.8214	$0.8229 \pm 0.0082$
$r_{143 \times 217}^{\text{PS}}$	0.881	$> 0.850$	$\Omega_m h^2$	0.14138	$0.1414 \pm 0.0018$	$r_{\text{drag}}/D_V(0.57)$	0.07214	$0.07244 \pm 0.00070$

Best-fit  $\chi^2_{\text{eff}} = 7791.14$ ; R-1 = 0.01434

$\chi^2_{\text{eff}}$ : BAO - DR7: 0.56 6DF: 0.06 DR9: 0.66 CMB - lowl: -8.14 CamSpec: 7797.12



## 20.16 base\_yhe\_planck\_lowl\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02269	$0.02366 \pm 0.00054$	$r_{143 \times 217}^{\text{CIB}}$	0.661	$0.49^{+0.27}_{-0.23}$	$\Omega_m h^3$	0.09762	$0.0994 \pm 0.0013$
$\Omega_c h^2$	0.11653	$0.1113 \pm 0.0031$	$\gamma^{\text{CIB}}$	0.515	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.3035	$0.340 \pm 0.029$
$100\theta_{\text{MC}}$	1.04369	$1.0458 \pm 0.0015$	$c_{100}$	1.000586	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8440	$1.842 \pm 0.015$
$\tau$	0.0953	$0.222^{+0.050}_{-0.043}$	$c_{217}$	0.99643	$0.9965 \pm 0.0014$	Age/Gyr	13.667	$13.48 \pm 0.10$
$Y_{\text{He}}$	0.3035	$0.340 \pm 0.029$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.70	$1091.71 \pm 0.90$
$n_s$	0.9851	$1.027 \pm 0.022$	$A^{\text{kSZ}}$	10.0	—	$r_*$	144.87	$145.37 \pm 0.58$
$\ln(10^{10} A_s)$	3.105	$3.36^{+0.10}_{-0.086}$	$\beta_1^1$	0.58	$0.53 \pm 0.58$	$100\theta_*$	1.04226	$1.04322 \pm 0.00076$
$A_{100}^{\text{PS}}$	156	$177 \pm 60$	$\Omega_\Lambda$	0.7129	$0.747^{+0.020}_{-0.017}$	$z_{\text{drag}}$	1062.45	$1065.6 \pm 2.1$
$A_{143}^{\text{PS}}$	28.9	$62 \pm 10$	$\Omega_m$	0.2871	$0.253^{+0.017}_{-0.020}$	$r_{\text{drag}}$	147.47	$147.69 \pm 0.59$
$A_{217}^{\text{PS}}$	91.0	$108^{+20}_{-20}$	$\sigma_8$	0.8310	$0.933 \pm 0.040$	$k_D$	0.13826	$0.1371 \pm 0.0010$
$A_{143}^{\text{CIB}}$	13.0	$< 12.2$	$z_{\text{re}}$	11.69	$21^{+3}_{-3}$	$100\theta_D$	0.16347	$0.1644 \pm 0.0012$
$A_{217}^{\text{CIB}}$	36.8	$32^{+7}_{-10}$	$H_0$	69.80	$73.3 \pm 2.0$	$z_{\text{eq}}$	3327	$3225 \pm 65$
$A_{143}^{\text{tSZ}}$	10.0	—	$10^9 A_s$	2.231	$2.88 \pm 0.26$	$100\theta_{\text{eq}}$	0.8301	$0.854 \pm 0.015$
$r_{143 \times 217}^{\text{PS}}$	0.874	$> 0.850$	$\Omega_m h^2$	0.13987	$0.1356 \pm 0.0027$	$r_{\text{drag}}/D_V(0.57)$	0.07307	$0.0755 \pm 0.0014$

Best-fit  $\chi^2_{\text{eff}} = 7792.97$ ; R-1 = 0.00733

$\chi^2_{\text{eff}}$ : CMB - lowl: -9.07 CamSpec: 7798.36 Hubble - HST: 2.81

## 20.17 base\_yhe\_planck\_lowl\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02252	$0.02376 \pm 0.00068$	$r_{143 \times 217}^{\text{CIB}}$	0.556	$0.49^{+0.27}_{-0.23}$	$\Omega_m h^3$	0.09715	$0.0995 \pm 0.0015$
$\Omega_c h^2$	0.11751	$0.1107 \pm 0.0038$	$\gamma^{\text{CIB}}$	0.525	$0.54^{+0.14}_{-0.12}$	$Y_P$	0.2883	$0.343 \pm 0.034$
$100\theta_{\text{MC}}$	1.04299	$1.0460 \pm 0.0018$	$c_{100}$	1.000590	$1.00058 \pm 0.00040$	$10^9 A_s e^{-2\tau}$	1.8439	$1.841 \pm 0.015$
$\tau$	0.095	$0.229^{+0.060}_{-0.052}$	$c_{217}$	0.99646	$0.9965 \pm 0.0014$	Age/Gyr	13.710	$13.46 \pm 0.13$
$Y_{\text{He}}$	0.2883	$0.343 \pm 0.034$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.33	$1091.73 \pm 0.92$
$n_s$	0.9796	$1.032 \pm 0.027$	$A^{\text{kSZ}}$	7.10	—	$r_*$	144.81	$145.44 \pm 0.62$
$\ln(10^{10} A_s)$	3.104	$3.37^{+0.12}_{-0.10}$	$\beta_1^1$	0.68	$0.52 \pm 0.58$	$100\theta_*$	1.04200	$1.04332 \pm 0.00088$
$A_{100}^{\text{PS}}$	150	$177 \pm 60$	$\Omega_\Lambda$	0.7050	$0.750^{+0.026}_{-0.021}$	$z_{\text{drag}}$	1061.57	$1066.0 \pm 2.5$
$A_{143}^{\text{PS}}$	41.5	$62 \pm 10$	$\Omega_m$	0.2950	$0.250^{+0.021}_{-0.026}$	$r_{\text{drag}}$	147.45	$147.74 \pm 0.60$
$A_{217}^{\text{PS}}$	103.0	$108^{+20}_{-20}$	$\sigma_8$	0.8324	$0.938 \pm 0.045$	$k_D$	0.13881	$0.1369 \pm 0.0012$
$A_{143}^{\text{CIB}}$	7.99	$< 12.2$	$z_{\text{re}}$	11.62	$21^{+4}_{-3}$	$100\theta_D$	0.16286	$0.1646 \pm 0.0013$
$A_{217}^{\text{CIB}}$	32.0	$32^{+7}_{-10}$	$H_0$	69.06	$73.7 \pm 2.5$	$z_{\text{eq}}$	3346	$3213 \pm 78$
$A_{143}^{\text{tSZ}}$	8.96	—	$10^9 A_s$	2.229	$2.93 \pm 0.32$	$100\theta_{\text{eq}}$	0.8255	$0.857 \pm 0.018$
$r_{143 \times 217}^{\text{PS}}$	0.876	$> 0.850$	$\Omega_m h^2$	0.14067	$0.1351 \pm 0.0033$	$r_{\text{drag}}/D_V(0.57)$	0.07258	$0.0757 \pm 0.0017$

Best-fit  $\chi^2_{\text{eff}} = 8217.97$ ; R-1 = 0.00705

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.84 CamSpec: 7797.91 SN - SNLS: 428.13

## 20.18 base\_yhe\_planck\_lowl\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02237	$0.02336^{+0.00066}_{-0.00076}$	$r_{143 \times 217}^{\text{CIB}}$	0.532	$0.49^{+0.27}_{-0.23}$	$\Omega_m h^3$	0.09678	$0.0988^{+0.0014}_{-0.0016}$
$\Omega_c h^2$	0.11816	$0.1132 \pm 0.0040$	$\gamma^{\text{CIB}}$	0.517	$0.54 \pm 0.13$	$Y_P$	0.2786	$0.326 \pm 0.034$
$100\theta_{\text{MC}}$	1.04252	$1.0450^{+0.0017}_{-0.0020}$	$c_{100}$	1.000590	$1.00058 \pm 0.00039$	$10^9 A_s e^{-2\tau}$	1.8405	$1.844 \pm 0.016$
$\tau$	0.095	$0.197^{+0.063}_{-0.057}$	$c_{217}$	0.99635	$0.9965 \pm 0.0014$	Age/Gyr	13.741	$13.54^{+0.15}_{-0.13}$
$Y_{\text{He}}$	0.2786	$0.326 \pm 0.034$	$\xi^{\text{tSZ-CIB}}$	0.00	—	$z_*$	1091.15	$1091.65 \pm 0.90$
$n_s$	0.9736	$1.015^{+0.026}_{-0.031}$	$A^{\text{kSZ}}$	9.68	—	$r_*$	144.78	$145.15 \pm 0.65$
$\ln(10^{10} A_s)$	3.102	$3.31 \pm 0.12$	$\beta_1^1$	0.64	$0.55 \pm 0.58$	$100\theta_*$	1.04182	$1.04286 \pm 0.00090$
$A_{100}^{\text{PS}}$	130	$178 \pm 60$	$\Omega_\Lambda$	0.6996	$0.735^{+0.028}_{-0.025}$	$z_{\text{drag}}$	1060.96	$1064.6^{+2.4}_{-2.8}$
$A_{143}^{\text{PS}}$	38.7	$61 \pm 10$	$\Omega_m$	0.3004	$0.265^{+0.025}_{-0.028}$	$r_{\text{drag}}$	147.47	$147.55 \pm 0.61$
$A_{217}^{\text{PS}}$	102.4	$108^{+20}_{-20}$	$\sigma_8$	0.8322	$0.915 \pm 0.047$	$k_D$	0.13909	$0.1376 \pm 0.0013$
$A_{143}^{\text{CIB}}$	5.35	$< 12.1$	$z_{\text{re}}$	11.61	$19.0^{+4.6}_{-3.4}$	$100\theta_D$	0.16253	$0.1640^{+0.0012}_{-0.0014}$
$A_{217}^{\text{CIB}}$	29.5	$32^{+7}_{-10}$	$H_0$	68.55	$72.1^{+2.5}_{-2.9}$	$z_{\text{eq}}$	3358	$3263 \pm 83$
$A_{143}^{\text{tSZ}}$	9.50	—	$10^9 A_s$	2.224	$2.75^{+0.31}_{-0.35}$	$100\theta_{\text{eq}}$	0.8225	$0.846 \pm 0.019$
$r_{143 \times 217}^{\text{PS}}$	0.881	$> 0.850$	$\Omega_m h^2$	0.14118	$0.1372 \pm 0.0035$	$r_{\text{drag}}/D_V(0.57)$	0.07226	$0.0746^{+0.0017}_{-0.0020}$

Best-fit  $\chi^2_{\text{eff}} = 7919.95$ ; R-1 = 0.00682

$\chi^2_{\text{eff}}$ : CMB - lowl: -8.35 CamSpec: 7797.30 SN - Union2.1: 130.17

## 20.19 base\_yhe\_WMAP

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.02270	$0.02264 \pm 0.00050$	$\sigma_8$	0.8132	$0.813^{+0.031}_{-0.043}$	$r_*$	145.77	$145.7^{+1.9}_{-1.5}$
$\Omega_c h^2$	0.1140	$0.1143^{+0.0052}_{-0.0065}$	$z_{\text{re}}$	10.91	$10.8^{+1.2}_{-1.4}$	$100\theta_*$	1.04065	$1.0404 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04040	$1.0407^{+0.0033}_{-0.0045}$	$H_0$	69.64	$69.6 \pm 2.2$	$z_{\text{drag}}$	1060.16	$1060.8^{+2.4}_{-4.5}$
$\tau$	0.0920	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.221	$2.213^{+0.078}_{-0.097}$	$r_{\text{drag}}$	148.35	$148.3^{+1.9}_{-1.5}$
$Y_{\text{He}}$	0.242	$0.253^{+0.065}_{-0.13}$	$\Omega_m h^2$	0.1373	$0.1376^{+0.0050}_{-0.0064}$	$k_D$	0.13992	$0.1392^{+0.0036}_{-0.0026}$
$n_s$	0.9749	$0.975 \pm 0.015$	$\Omega_m h^3$	0.09562	$0.0957^{+0.0023}_{-0.0031}$	$100\theta_D$	0.16029	$0.1613^{+0.0029}_{-0.0061}$
$\ln(10^{10} A_s)$	3.1005	$3.096^{+0.037}_{-0.043}$	$Y_P$	0.242	$0.253^{+0.071}_{-0.12}$	$z_{\text{eq}}$	3266	$3272^{+120}_{-150}$
$A_{\text{tSZ}}$	0.72	—	$10^9 A_s e^{-2\tau}$	1.848	$1.852^{+0.046}_{-0.071}$	$100\theta_{\text{eq}}$	0.8391	$0.839 \pm 0.025$
$\Omega_\Lambda$	0.7168	$0.715^{+0.031}_{-0.025}$	Age/Gyr	13.751	$13.75 \pm 0.13$	$r_{\text{drag}}/D_V(0.57)$	0.07318	$0.0732 \pm 0.0018$
$\Omega_m$	0.2832	$0.285^{+0.025}_{-0.031}$	$z_*$	1088.85	$1089.9^{+2.7}_{-5.8}$			

Best-fit  $\chi^2_{\text{eff}} = 7558.02$ ; R-1 = 0.00703  
 $\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.02

## 20.20 base\_yhe\_WMAP\_post\_BAO

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022501	$0.02250 \pm 0.00043$	$\sigma_8$	0.8167	$0.823^{+0.026}_{-0.037}$	$r_*$	145.43	$145.1^{+1.5}_{-1.2}$
$\Omega_c h^2$	0.11594	$0.1166^{+0.0032}_{-0.0041}$	$z_{\text{re}}$	10.54	$10.7^{+1.2}_{-1.4}$	$100\theta_*$	1.03984	$1.0399 \pm 0.0022$
$100\theta_{\text{MC}}$	1.03938	$1.0404^{+0.0034}_{-0.0047}$	$H_0$	68.40	$68.52 \pm 0.99$	$z_{\text{drag}}$	1059.59	$1060.9^{+2.6}_{-4.6}$
$\tau$	0.0869	$0.086 \pm 0.013$	$10^9 A_s$	2.210	$2.221^{+0.077}_{-0.094}$	$r_{\text{drag}}$	148.06	$147.8^{+1.5}_{-1.2}$
$Y_{\text{He}}$	0.234	$0.262^{+0.082}_{-0.12}$	$\Omega_m h^2$	0.13908	$0.1398^{+0.0033}_{-0.0041}$	$k_D$	0.14038	$0.1393^{+0.0038}_{-0.0026}$
$n_s$	0.9696	$0.971^{+0.013}_{-0.015}$	$\Omega_m h^3$	0.09513	$0.0958^{+0.0024}_{-0.0031}$	$100\theta_D$	0.16001	$0.1617^{+0.0031}_{-0.0062}$
$\ln(10^{10} A_s)$	3.0954	$3.100^{+0.036}_{-0.041}$	$Y_P$	0.234	$0.262^{+0.080}_{-0.11}$	$z_{\text{eq}}$	3308	$3325^{+80}_{-99}$
$A_{\text{tSZ}}$	0.00	—	$10^9 A_s e^{-2\tau}$	1.857	$1.868^{+0.042}_{-0.061}$	$100\theta_{\text{eq}}$	0.8297	$0.828 \pm 0.014$
$\Omega_\Lambda$	0.7027	$0.702^{+0.013}_{-0.012}$	Age/Gyr	13.812	$13.78^{+0.14}_{-0.12}$	$r_{\text{drag}}/D_V(0.57)$	0.07227	$0.07228 \pm 0.00072$
$\Omega_m$	0.2973	$0.298 \pm 0.012$	$z_*$	1088.97	$1090.6^{+2.7}_{-5.7}$			

Best-fit  $\chi^2_{\text{eff}} = 7559.24$ ; R-1 = 0.01189

$\chi^2_{\text{eff}}$ : BAO - 6DF: 0.06 DR7: 0.34 DR9: 0.86 CMB - WMAP: 7557.97

## 20.21 base\_yhe\_WMAP\_post\_HST

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022953	$0.02292 \pm 0.00046$	$\sigma_8$	0.8007	$0.798^{+0.029}_{-0.040}$	$r_*$	146.54	$146.5^{+1.7}_{-1.3}$
$\Omega_c h^2$	0.11046	$0.1105^{+0.0044}_{-0.0052}$	$z_{\text{re}}$	11.06	$10.9^{+1.2}_{-1.4}$	$100\theta_*$	1.04144	$1.0414 \pm 0.0022$
$100\theta_{\text{MC}}$	1.04104	$1.0415^{+0.0031}_{-0.0043}$	$H_0$	71.40	$71.6 \pm 1.7$	$z_{\text{drag}}$	1060.24	$1060.8^{+2.2}_{-4.2}$
$\tau$	0.0964	$0.093^{+0.013}_{-0.015}$	$10^9 A_s$	2.219	$2.206^{+0.078}_{-0.096}$	$r_{\text{drag}}$	149.05	$149.1^{+1.7}_{-1.4}$
$Y_{\text{He}}$	0.235	$0.244^{+0.046}_{-0.14}$	$\Omega_m h^2$	0.13406	$0.1340^{+0.0043}_{-0.0052}$	$k_D$	0.13963	$0.1390^{+0.0036}_{-0.0024}$
$n_s$	0.9825	$0.982^{+0.013}_{-0.015}$	$\Omega_m h^3$	0.09572	$0.0959^{+0.0022}_{-0.0029}$	$100\theta_D$	0.15990	$0.1607^{+0.0025}_{-0.0058}$
$\ln(10^{10} A_s)$	3.0996	$3.093^{+0.037}_{-0.042}$	$Y_P$	0.235	$0.244^{+0.062}_{-0.12}$	$z_{\text{eq}}$	3188	$3187^{+100}_{-120}$
$A_{\text{tSZ}}$	0.24	—	$10^9 A_s e^{-2\tau}$	1.830	$1.830^{+0.041}_{-0.064}$	$100\theta_{\text{eq}}$	0.8557	$0.857 \pm 0.021$
$\Omega_\Lambda$	0.7370	$0.738^{+0.021}_{-0.018}$	Age/Gyr	13.688	$13.68 \pm 0.12$	$r_{\text{drag}}/D_V(0.57)$	0.07458	$0.0747 \pm 0.0014$
$\Omega_m$	0.2630	$0.262^{+0.018}_{-0.021}$	$z_*$	1087.98	$1088.8^{+2.3}_{-5.3}$			

Best-fit  $\chi^2_{\text{eff}} = 7559.82$ ; R-1 = 0.00938

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.75 Hubble - HST: 1.07

## 20.22 base\_yhe\_WMAP\_post\_SNLS

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022843	$0.02281 \pm 0.00049$	$\sigma_8$	0.8029	$0.797^{+0.028}_{-0.036}$	$r_*$	146.42	$146.5^{+1.6}_{-1.3}$
$\Omega_c h^2$	0.11119	$0.1109^{+0.0045}_{-0.0050}$	$z_{\text{re}}$	11.23	$10.7^{+1.2}_{-1.3}$	$100\theta_*$	1.04073	$1.0408 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04034	$1.0406^{+0.0031}_{-0.0042}$	$H_0$	70.79	$71.0 \pm 1.9$	$z_{\text{drag}}$	1060.09	$1060.2^{+2.1}_{-4.0}$
$\tau$	0.0977	$0.092^{+0.013}_{-0.015}$	$10^9 A_s$	2.222	$2.197^{+0.075}_{-0.092}$	$r_{\text{drag}}$	148.97	$149.1^{+1.6}_{-1.3}$
$Y_{\text{He}}$	0.236	$0.234^{+0.040}_{-0.13}$	$\Omega_m h^2$	0.13468	$0.1343^{+0.0043}_{-0.0050}$	$k_D$	0.13960	$0.1393^{+0.0035}_{-0.0022}$
$n_s$	0.9780	$0.978 \pm 0.014$	$\Omega_m h^3$	0.09534	$0.0953^{+0.0022}_{-0.0028}$	$100\theta_D$	0.15995	$0.1603^{+0.0023}_{-0.0054}$
$\ln(10^{10} A_s)$	3.1011	$3.089^{+0.036}_{-0.041}$	$Y_P$	0.236	$0.234^{+0.056}_{-0.11}$	$z_{\text{eq}}$	3203	$3194^{+100}_{-120}$
$A_{\text{tSZ}}$	1.26	—	$10^9 A_s e^{-2\tau}$	1.8279	$1.828^{+0.039}_{-0.060}$	$100\theta_{\text{eq}}$	0.8519	$0.854 \pm 0.021$
$\Omega_\Lambda$	0.7312	$0.733 \pm 0.022$	Age/Gyr	13.724	$13.72 \pm 0.13$	$r_{\text{drag}}/D_V(0.57)$	0.07413	$0.0743^{+0.0014}_{-0.0017}$
$\Omega_m$	0.2688	$0.267 \pm 0.022$	$z_*$	1088.21	$1088.5^{+2.1}_{-5.0}$			

Best-fit  $\chi^2_{\text{eff}} = 7985.01$ ; R-1 = 0.00669

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7558.56 SN - SNLS: 426.45

## 20.23 base\_yhe\_WMAP\_post\_Union2

Parameter	Best fit	68% limits	Parameter	Best fit	68% limits	Parameter	Best fit	68% limits
$\Omega_b h^2$	0.022690	$0.02266 \pm 0.00049$	$\sigma_8$	0.8114	$0.810^{+0.029}_{-0.040}$	$r_*$	145.85	$145.8^{+1.8}_{-1.4}$
$\Omega_c h^2$	0.1136	$0.1137^{+0.0046}_{-0.0057}$	$z_{\text{re}}$	10.84	$10.7^{+1.2}_{-1.4}$	$100\theta_*$	1.04072	$1.0404 \pm 0.0023$
$100\theta_{\text{MC}}$	1.04053	$1.0407^{+0.0033}_{-0.0045}$	$H_0$	69.79	$69.9 \pm 1.9$	$z_{\text{drag}}$	1060.20	$1060.6^{+2.4}_{-4.4}$
$\tau$	0.0910	$0.089^{+0.013}_{-0.015}$	$10^9 A_s$	2.216	$2.210^{+0.076}_{-0.095}$	$r_{\text{drag}}$	148.44	$148.4^{+1.7}_{-1.4}$
$Y_{\text{He}}$	0.245	$0.249^{+0.062}_{-0.13}$	$\Omega_m h^2$	0.1370	$0.1370^{+0.0045}_{-0.0056}$	$k_D$	0.13971	$0.1392^{+0.0036}_{-0.0025}$
$n_s$	0.9754	$0.975 \pm 0.015$	$\Omega_m h^3$	0.09560	$0.0956^{+0.0023}_{-0.0030}$	$100\theta_D$	0.16045	$0.1611^{+0.0027}_{-0.0059}$
$\ln(10^{10} A_s)$	3.0983	$3.095^{+0.036}_{-0.042}$	$Y_P$	0.245	$0.249^{+0.068}_{-0.12}$	$z_{\text{eq}}$	3258	$3258^{+110}_{-130}$
$A_{\text{tSZ}}$	0.36	—	$10^9 A_s e^{-2\tau}$	1.847	$1.848^{+0.043}_{-0.066}$	$100\theta_{\text{eq}}$	0.8407	$0.841 \pm 0.022$
$\Omega_\Lambda$	0.7188	$0.718^{+0.026}_{-0.022}$	Age/Gyr	13.747	$13.74 \pm 0.13$	$r_{\text{drag}}/D_V(0.57)$	0.07332	$0.0734 \pm 0.0016$
$\Omega_m$	0.2812	$0.282^{+0.022}_{-0.026}$	$z_*$	1088.94	$1089.6^{+2.5}_{-5.6}$			

Best-fit  $\chi^2_{\text{eff}} = 7687.80$ ; R-1 = 0.00687

$\chi^2_{\text{eff}}$ : CMB - WMAP: 7557.91 SN - Union2.1: 129.90